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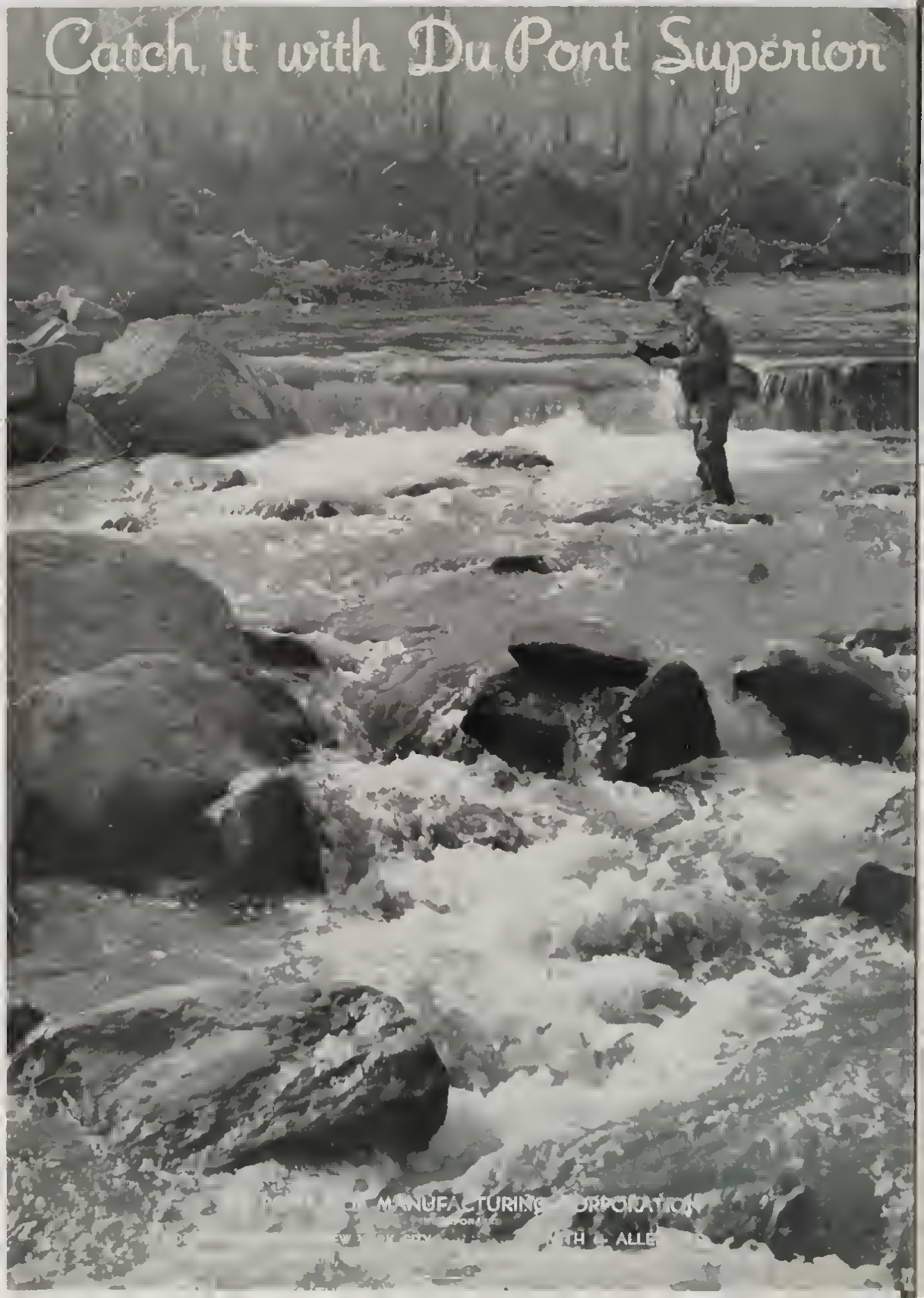
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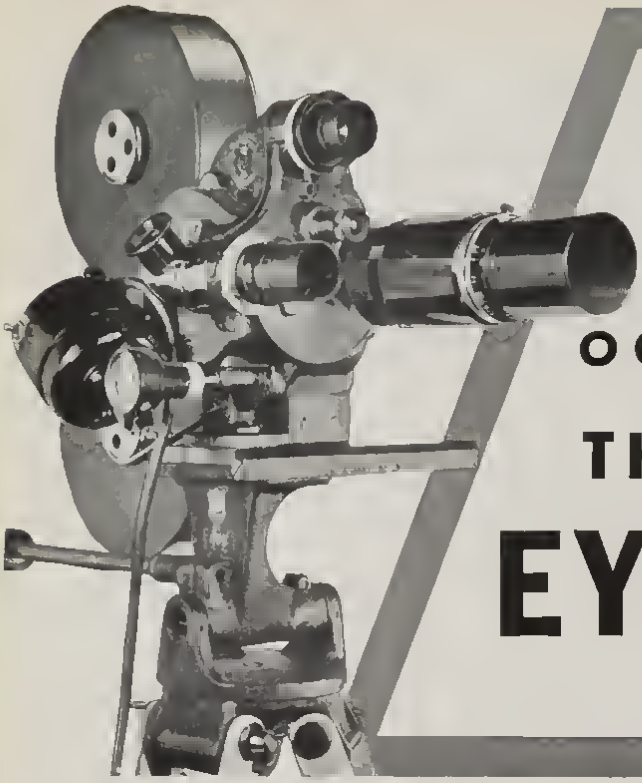

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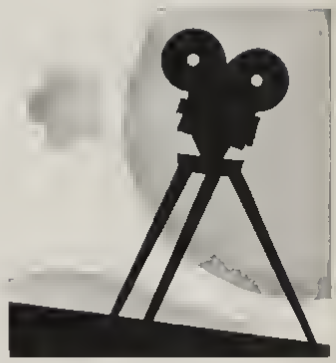

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THE AMERICAN SOCIETY OF CINEMATOGRAPHERS was founded in 1918 for the purpose of bringing into closer cooperation all those leaders in cinematography who strive for preeminence in artistic and technical leadership; to further the advancement of the cinema and its allied crafts through unceasing research and experimentation as well as through bringing the artists and the scientists of cinematography into more intimate fellowship. Its membership is composed of the outstanding cinematographers of the world, with Associate and Honorary memberships bestowed upon those who, though not active cinematographers, are engaged none the less in kindred pursuits, and who have by their achievements contributed outstandingly to the progress of cinematography as an art and as a science. To further these lofty aims and fittingly to chronicle the progress of cinematography the society's publication, The American Cinematographer, is dedicated.

ASC

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TIME PAYMENTS HERE

By GEORGE BLAISDELL

TIME marches on, we are told, and so at last Time Payments openly have marched into the field of camera equipment and all its accessories. It will be a good thing for the rapidly expanding commercial side of photography. It will mean larger sales of more quality equipment.

It will mean that the new-comer in the amateur field, the man and woman just "getting their teeth" into this fascinating thing, will yearn for more complete apparatus, for the stuff with all the gadgets, and they will make plans for turning in their lesser and what they will forthwith construe as outmoded material for the more up to date.

One of the manufacturers of a less expensive equipment now is reported to be running on an average from ten to fifteen thousand units behind his orders. We know that one new small camera of a standard manufacturer, one costing approximately with the stock lens about $60, was behind orders following announcement of its coming.

The natural result expected of the time plan would be a falling off in the purchases of cheaper units and the shifting of the buyer to the more expensive classes of equipment. We incline rather to the belief there will be little lessening in the buyers of the lesser units. The shift will come in the number of owners of lesser units, having served what in their opinion is equivalent to an apprenticeship with the cine camera, will now aspire to guide the movements of cameras equipped to do bigger and better things. And don't try to stop a man from buying the particular brand of a hobby on which his heart is set.

But now these thoughts bring to mind a remark heard not forty-eight hours prior to this writing, made by a man who may be credited with being measurably in the know: that the largest manufacturer of sub-normal low-priced equipment was laying his plans for adding more expensive lines to his present product.

That sounds now like the Time Payment Plan marching on!

▼

RARE PICKER OF SPOTS

ROBERT BRUCE for many years has been entertaining—and all unwittingly and most painlessly at the same time educating—the great picturegoing public. His scenic shorts have played second to nobody's. During the month at one of the Hollywood Boulevard houses was a single reel Technicolor exposed in Ireland. The title did not catch the eye. It should have been something about the Emerald Isle anyway, for emerald it was. Seemingly there is nothing in the United States, not even in New England, that can begin to match the deep green of Ireland's grass.

Surely it would require a rare scene to stand out in the memory following such a riot of water and sod, farm and village, plain and hill. One there was, with camera pointing down hill, of a brook deep enough to show no sand under it and recording only the colorful water, tumbling straight as a string and in uniform width up the left side of the screen.

For a hundred or more feet to the screen right of the brook there was a carpet of the old sod, and then between that and a highway a few scattered cottages. This is another one of those many times when words are pale, inadequate; but likewise it is another one of those times when those sitting out front for a moment unashamed step out of their shell and applaud with genuine heartiness the work of men with film and camera and developer and printer.

▼

16 MM CLUB HAS COLOR

AT its August meeting the Los Angeles 16mm Club members were given a treat in color. There was a journey of two couples to Honolulu with a lot of Kodachrome to be exposed. And they did it, to the delight of their friends.

The evening's exhibition was closed with a showing by Fred Champion. It was a long geographical itinerary, as the majority of humans rate these vacation things, and the pictures also were in Kodachrome. The scenes were of the coronation, of rural England and Scotland and a jump to France.

The shots of the coronation this reporter has been fortunate enough to see hitherto were of newsreels and in black and white. With the newsreelers handicapped by their lack of color in the photographing of this most colorful pageant and the Angeleno advantaged by the possession of it, the reporter frankly and unequivocally liked the amateur's the better.

Who will deny, by the way, that the newsreel will come in for a drawing power as yet entirely unknown when it is able to put on a mantle of color?

These scenes of English and Scottish small town and country life possessed rare educational value. Very likely already the authorities of the Hollywood Motion Picture Forum have learned of the existence of these pictures and are laying plans to secure them if possible for the 1938 conference.

With them also they should arrange for the presence of the photographer in the role of lecturer, for he qualifies in talk as in photography.

The club members and their guests had been warned if the program extended beyond their self-allotted time it would be all right for them to depart. The show lasted until 11:15. So did the audience remain while the projector turned.

▼

LAUGHTER FOUNDED IN NATURE

FOR steady audience laughter that for ten minutes at least never lets down, that ranges from chuckles to roars, major producers gladly will pay from fifty to a hundred thousand dollars. They will pay it gladly, knowing that at the box offices of the world that investment will be returned easily tenfold. Yet that same laughter is one of the most elusive things conceivable.

It is as unpredictable as the weather. Its volume usually is in proportion to the surprise that attaches to the act which stimulates it. There was a striking example in Paramount's "Exclusive" when old Reporter Charlie Ruggles, maudlin and obstinate, insisted to young City Editor Fred MacMurray, likewise maudlin and obstinate, the interior light of an electric icebox was extinguished as the door was closed.

Charlie reiterated, Fred's gaze was glued to the icebox door.

"Hahdayehknow" demanded the tall boy. It was a perfectly fair question.

And one of the funniest screen se-

Contrasty Diet

When work and means mean pork and beans
Like quail the days will fly!
When work that's mean means empty jeans
Like snail will hours drag by!
August, 1937 G B.

quences of the month was well on its way.

The mirth of the foregoing was overmatched if anything at the August meeting of the Eight Millimeter Club when one of the members screened a single reel 8mm. picture photographed by himself. The subject was the result of taking his camera into a barber's shop and recording from start to finish with the aid of such light as came through the windows his young son's first haircut.

The laugh started with the initial snap of the scissors. Seemingly every one of the hundred persons in the Bell and Howell auditorium was contributing to it. The little fellow certainly was concerned as to the plans of the smallish man in the smock. The child very probably was frightened, plenty, as any child had a right to be. The face remained as cold as Charlie Ruggles' icebox. But it revealed its owner was taking no chances on what the man hovering around planned to put over on him.

There was nothing much behind that great mirth of a hundred persons for ten minutes other than the expression in the child's eyes. While his head was held stationary there was no restraint on the eyes. From right to left they rolled in the effort to keep within their range the fleeting figure of the barber, to keep "tabs" on him.

The little fellow was out of the chair and several feet away from the man in the smock before the dead pan relaxed a trace. The barber had put his hand in the cash drawer and slipped something into the child's hand. Then as the distance between the two widened the smile came.

And the applause began all over again.

Who shall say these amateurs can fail to experience a genuine thrill when through the simplest of ways—the mere recording of the everyday, natural things we humans do—they bestow so much pleasure on so many of their fellows.

▼

A VETERAN PASSES

WHEN death took Carl A. (Doc) Willat August 6 there was removed from the world of the motion picture one of its veteran workers. Doc Willat entered the employ of Vitagraph in 1900, at the age of 21 years. The production company at that time was a small organization, but it was to grow in the coming fifteen years into the greatest motion picture stock company in the world.

In all of that expansion Doc Willat was in the forefront—on the production and business side. The conditions that obtained in the distribution division of the young picture industry are inconceivable to film men of today. Not alone was it necessary to make pictures as attractive as possible for a clientele that was far from established.

It was necessary to adopt every expedient to prevent competitors from securing possession of a positive print and surreptitiously "duping" it and straightway sending its offspring to the corners of the earth. And naturally there was no compunction on the part of those who had been robbed in robbing back.

Those were warm times. It is quite understandable why the various companies sought to protect themselves by exposing somewhere in every scene their trademark or some identifying symbol. They all had one, whether it was Biograph, Vitagraph, Edison, Lubin, Selig (its founder still with us here in Los Angeles) or Kalem.

Exterior or interior, that identifying mark could be spotted somewhere. Its adoption put a crimp in the duping industry, but it did not prevent it altogether. The world is wide.

Doc Willat was a mine of information as to the practices and malpractices of earlier days. The film man attained prominence in the Vitagraph organization and in other companies as well. At one time he delved deep into color. He married the daughter of William ("Pop") Rock, the older of the triumvirate of Vitagraph owners. The two remaining members of the firm which started Vitagraph over forty years ago, Messrs. Smith and Blackton, are living in Hollywood.

"Pop" Rock was a picturesque showman and a moneymaker. Just prior to his passing, if memory serve something over fifteen years ago, he was rated the largest owner of real estate in Brooklyn and possibly also in New York.

▼

CAPTAIN BRADLEY VISITS

CAPTAIN JOHN G. BRADLEY, chief of motion pictures and sound recordings of the National Archives in Washington, accompanied by Mrs. Bradley, was a Hollywood visitor during the end of August. While the captain was on vacation bent, nevertheless he renewed a number of acquaintances during his few days here. As it happens—and quite logically and naturally, incidentally—that he also is chairman of the Engineers' Society's committee on film preservation, it may be set down our visitor is one of the great authorities of the world on the subject of preserving and protecting film.

It is all a new field, this protecting of film—that is, in the scientific manner in which the Government is approaching this vastly important subject. There is every reason to believe, as the captain and his staff delve into the problem, that while they are growing in knowledge in this new science the motion picture industry steadily and increasingly will benefit and profit from their work.

In the years to come we are going to hear much of the National Archives, of the men who guide it, and of their methods and researches.

Four major universities and three major motion picture studios already have called on the captain for advice and assistance in the framing of their structures designed for the protection of property which, through being irreplacable, is priceless; and which with protection that may be created is ageless.

It is interesting to note that sitting at Captain Bradley's desk while he is on vacation is his chief aid, that well-known photographic veteran Carl Louis Gregory.

▼

WHO SAYS 'PARNELL' IS WEAK?

PRIOR to M-G-M's release of "Parnell" and during its initial exhibition stages some of the chatterboxes and sounding boards who condescend to keep us informed as to just what's what in picturedom damned it with exceedingly faint praise. It was even declared that Gable was not up to his usual stuff, yes, in one instance there was something about being "weak." One of the September biggies chorused in the same vein.

It fell to this reporter to look in on the subject during the past month. There is no hesitation on this writer's part in taking issue with these dissenters and in language the politeness of which or absence of it is dictated and restricted by the circumstances.

Of course we all recall that in America there were many persons who stood with the British Government against that King of England who later with great celerity was transformed into the Duke of Windsor. It's a safe bet a scratch imposed on one of these would produce the same results as on the skins of those who took a swat at "Parnell." Distinctly that screen biography is not J. B. propaganda.

Anyway, this reporter wants to register the thought that if Gable ever quite touched the elevation he reached in "Parnell" he was not so fortunate as to witness it. The player's work will have repercussions not anticipated by the croakers, for by reason of what it uncovered in the way of unsuspected ability it will lead to assignments which without that knowledge never would have been considered for him.

Gable had an ambundance of company, off the screen as well as on it. All departments gave to its making a full measure of their best, not for-

(Continued on Page 400)

TWO NEW FILMS FOR DUPLICATING WORK

Paper Presented at Spring 1937 Meeting of Society of Motion Picture Engineers by Messrs. C. E. Ives and J. I. Crabtree of Eastman Kodak, Rochester, N. Y.

(I) INTRODUCTION

IT HAS long been recognized that duplicate negatives of sufficiently improved characteristics would be of value in protection against loss through damage to the original negative. Capstaff and Seymour[1] in an earlier publication have defined a perfect duplicate negative as one which would give prints identical in every respect to those obtainable from the original negative. Since that time two papers have been published[2,3] giving the results of later work on photographic materials for duplicating work and methods for their use.

Recent progress in the photographic emulsion field has made available new duplicating positive and negative films which possess in a high degree the characteristics most needed for making satisfactory duplicates, and excellent results from the standpoint of quality and graininess have been obtained through their use

(II) THE DUPLICATING POSITIVE FILM

The Duplicating Positive (emulsion series *1365*) consists of a yellow dyed positive emulsion of medium contrast coated on a clear base.

As shown in the curves in Fig. 1 suitable emulsion quality and development characteristics are obtained with the *D-76* type of developer in the working gamma range of 1.0-1.5. There is practically no fog under normal conditions of use. It will be noted from the exposure scale that exposures somewhat greater than usual have been employed. The Eastman II*b* sensitometer gives proper exposures for process control purposes with multiple exposures of three to eight times

The sufficiency of exposure under any particular condition can be judged from the extent of the straight-line portion of the curve obtained It is usually found that a triple exposure is sufficient when the II*b* sensitometer is set for the positive exposure condition with the exception that the light-filter is removed. The color-sensitivity of the Duplicating Positive emulsion is similar to that of Motion Picture Positive (series *1301*) and, therefore, this film can be handled under the positive room illumination furnished by the Series *O* Wratten safelight in an indirect fixture

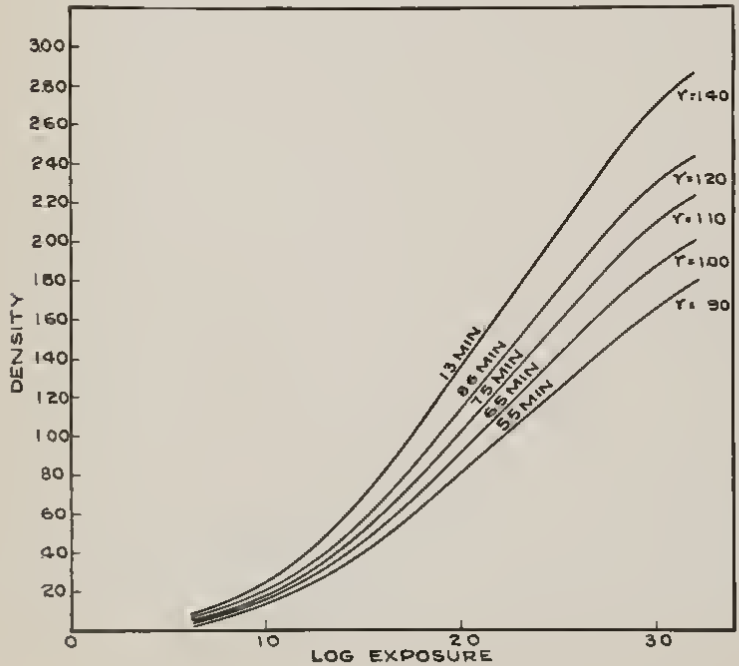


Fig. 1 (a). Exposure curves of Duplicating Positive (Emulsion 1365), with D-76 developer.

(III) THE DUPLICATING NEGATIVE FILM

The Duplicating Negative Film (emulsion series *1203*) consists of a low-contrast panchromatic emulsion coated on a gray base of the same type as used for other negative film.

The curves in Fig. 2 (see Pages 000 and 000) show that with the *D-76* type of developer proper emulsion quality and control of contrast are obtained in the recommended gamma range of 0.6 to 0.7. Emulsion *1203* is exposed sufficiently when a single exposure is given with the II*b* sensitometer at the normal *positive* setting.

The distribution of spectral sensitivity is shown by the spectrogram in Fig. 3, the indications of which will be found useful for comparison with those of other emulsions, as shown on page 64 of the handbook of "Motion Picture Laboratory Practice."[4]

This extended color-sensitivity gives the Duplicating Negative emulsion additional speed which is of considerable advantage where optical printing is employed, and particularly in the case where a master positive is dense

While the panchromatic emulsion is sensitive to all portions of the visible spectrum, the green Wratten Series *3* safelight has the advantage of visual efficiency at the level of illumination employed in photographic

darkrooms. However, the speed of the Duplicating Negative emulsion is such as to permit illumination levels somewhat higher than are obtained conveniently by the use of the standard Wratten Series *3* filter.

The most satisfactory way of obtaining the required increase in illumination is to substitute a sheet of tissue paper for the regular-weight white paper used in the Series *3* filter. The darkroom illumination should be tested with the Duplicating Negative Film in the manner recommended in the handbook of "Motion Picture Laboratory Practice"[1] (p. 139).

It will be observed that both the Duplicating Positive and Duplicating Negative have a very fine grain structure and give a somewhat transparent brownish image. The effective density of such a deposit when printing by contact on Motion Picture Positive Film is considerably greater than that indicated by visual densitometry.

Consequently, the printing contrast under this condition is greater than it appears to be by visual or densitometric comparison with a Super *X* (emulsion *1237*) negative, for example. The values for density were determined with a visual densitometer, usually the Eastman densitometer. The effect of this condition on densitometry and the selection of gamma values is treated in more detail following.

Both the Duplicating Positive and Duplicating Negative are capable of reproducing fine image detail.

(IV) MAKING THE MASTER POSITIVE

The master positive should be the first print made from the original negative in order to serve as an insurance against loss of or damage to the original negative during editing, cutting, or printing.

(*a*) *Printing.*—Good reproduction of tone in the duplicating process is assured if the exposure is selected in such a way as to utilize the region of proportional reproduction indicated by the straight-line portion of the characteristic curve. In this region the densities in the master positive bear a direct relation to those in the original negative.

While it is possible to obtain acceptable tone reproduction without confining exposures strictly within this range, the manner of procedure in the two steps in the process must be determined by trial and error. No simple systematic procedure can be prescribed. Therefore, it is assumed, for the purpose of description in this paper, that the region of proportional reproduction is utilized exclusively.

Printing exposure requirements for the master positive are illustrated in the following example: An original negative having a maximum density of 1.40 required an exposure of approximately 400 meter-candle-seconds to produce the required minimum density in the master positive of 0.70 at a gamma of 1.25 under recommended development conditions.

This exposure is given in 0.12 second by a 500-watt 110-volt monoplane filament lamp operated at approximately 85 volts and located at a distance of 10 inches from the raw film. These conditions refer to the case of contact printing at 15 feet per minute. The exposure required depends, of course, upon the emulsion speed realized under the actual development conditions for the Duplicating Positive.

Compare with Original

If the means of controlling exposures in printing the master positive provides regular log exposure increments from step to step equal to those used in the equipment for exhibition release printing, then the printer settings for master positive printing can be obtained from those found necessary for a "balanced" release print made from the original negative.

It is necessary only to establish the exposure level which will produce a sufficiently high minimum density for successful tone reproduction, that is, about 0.70. If this procedure is followed, the scene to scene variations in density are largely disposed of and a minimum of adjustment will be required in the succeeding operation to produce a duplicate negative which has uniform printing quality.

When operating conditions are being selected for the duplicating process the effect of an adjustment at any point in the procedure should be tested by carrying the duplicating process through to completion. Results should be judged only by examination of prints from the original and duplicate negative, because visual examination of the Duplicating Film images may be misleading for the reasons set forth hitherto.

As stated in previous publications,[2] the duplicating process requires printing equipment capable of giving good definition and uniformity of exposure. A diaphragm or matte type of light control is to be preferred to one involving change in lamp current and, consequently, changing quality of illumination. However, the effect of moderate changes in lamp current upon photographic contrast is not very serious with emulsions *1365* or *1203*.

(*b*) *Processing.*—Duplicating work requires the use of the best possible processing equipment in order to hold such imperfections as unevenness below a tolerance limit. The print from a duplicate negative shows the accumulated imperfections of four steps in processing as compared with two in the case of a print from an original negative.

Good Results with Dilution

The curves shown herewith were obtained under the manufacturer's standardized processing treatment[3] with *D-76* developer of normal strength. The *D-76* type of developer gives good tone quality and permits convenient control of development velocity through modifications of the nature suggested in an earlier publication.[4] These modifications are also discussed on page 90, *et seq*, of the

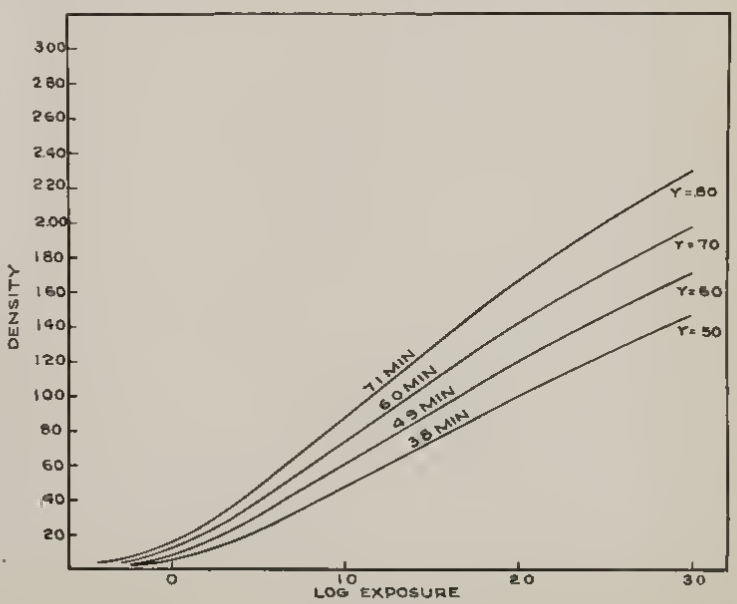


Fig. 2 (a). Exposure curves of Duplicating Negative (Emulsion 1203), with D-76 developer.

handbook of "Motion Picture Laboratory Practice."[4] In most motion picture processing machines a developer of somewhat less activity than normal *D-76* is preferable.

Good results can be obtained by dilution to two-thirds strength, for example, or as suggested in the publication referred to. In order to obtain the best processing control, it is desirable both for the Duplicating Positive Film *1365* and the Duplicating Negative Film *1203* that processing be carried on in developer maintained at a uniform degree of exhaustion and replenished to maintain a constant rate of development.

In selecting gammas for the master positive and duplicate negative it is assumed in general that no modification of quality is intended to be effected through the use of the duplicating process. Such modifications are easily made, but are considered as the exceptional case.

In the experimental work on the new type of duplicating emulsions tests were made on the effect of using a high gamma for the master positive and a low gamma for the duplicate negative as compared with the use of equal gammas in the two steps. Graininess was found to be less for the high-gamma—low-gamma method than for equal gammas. This confirms previous work[5] on other emulsions. Master positive gammas between 1.1 and 1.5 were found suitable for the master positive with duplicate negative gammas in the neighborhood of 0.6 to 0.7.

Recommendations are made below on the basis of a value of 1.25 for the master positive. A higher gamma in the master positive has the effect of procuring somewhat greater effective emulsion speed in the master positive stage and, generally speaking, a corresponding increase in the exposure required for printing the duplicate negative, because of the increased master positive density. For this reason it is not found advantageous to use higher values for the master positive gamma.

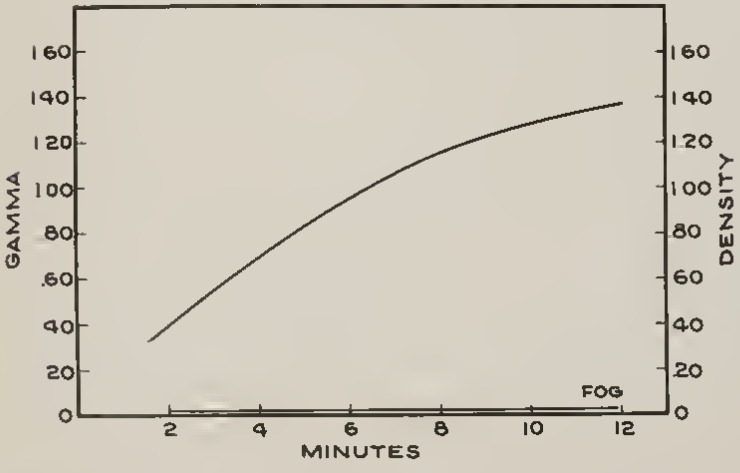
The yellow dye is discharged very rapidly from the emulsion during development. While it imparts a temporary coloration to the developer, it does not impair the properties of the developer.

A good hardening fixing bath such as *F-25* is suitable for use with emulsion *1365*. In the fresh fixing bath, fixation is complete in 2 minutes. Hardening of this emulsion takes place rapidly and becomes excessive if treatment is prolonged greatly beyond this time. This should be avoided because the emulsion surface is water repellent and, therefore, liable to water spotting. If, because of necessarily longer time of treatment or because of the constitution of the fixing bath, hardening is excessive, this should be corrected by suitable modification of the bath.[6] Fixing baths in an extremely exhausted condition should not be used for duplicating work.

Hypo and other soluble substances are removed rapidly from the *1365* and *1203* types of emulsions during washing. On account of the value of any master positive or duplicate negative as a permanent record, the concentration of hypo should be reduced to a very low magnitude by thorough washing so as to avoid the danger of image fading.[7]

(*c*) *Drying.*—On account of the smooth glossy condition of the surface of emulsions *1365* and *1203* and the inherent rapidity of drying, any maladjustment in the drying operation can cause drying spots. The quantity of "loose" water left on the emulsion surface after squeegeeing must be very slight or droplets form with drying lines or spots as a consequence. However, a careful adjustment of standard squeegeeing equipment should suffice to give good results. The *1365* and *1203* emulsions are dried in one-third to one-half the time required for Motion Picture Positive Film under the normal drying conditions for the latter. The drying rate should be diminished by lowering the dry-bulb temperature, or reducing the air velocity, or by raising the humidity in any convenient manner. Upon leaving the drying cabinet, the film should be in a suitable condition for handling in succeeding operations and, consequently, should have a moisture content of equilibrium with an atmosphere of about 60 per cent relative humidity at room temperature. This condition should be attained in about 15 minutes of drying time.

Fig 1 (b). Time-Gamma curve of Duplicating Positive (Emulsion 1365), with D-76 developer.



(V) MAKING THE DUPLICATE NEGATIVE

(*a*) *Printing.*—As indicated above for the master positive, it is assumed that the *1203* duplicate negative is to be exposed in such a way as to utilize the region of proportional tone reproduction characterized by the straight-line portion of the density-log exposure curve. For a master positive having a maximum density of 1.95, an exposure of 150 meter-candle-seconds is required to produce the minimum density of 0.45 at a development gamma of 0.65. These values have been determined for the use of a master positive of the density and contrast recommended above. The resultant duplicate negative will have a maximum density of 1.30, a minimum density of 0.45, and a density scale of 0.85 as compared with 1.40, 0.40, and 1.0 for the corresponding values in the original negative. The difference in the density scale of the original and duplicate negatives results from the difference in the visual and effective printing densities of the Duplicating Negative Film. This type of discrepancy is observed with duplicate negatives made with materials used previous to the present time, but is of lesser magnitude. However, it has no disturbing effect in the duplicating operation after standards are once set up for the processing solutions which are used. Control in making the duplicate negative is maintained by means of sensitometric strips exposed on the II*b* sensitometer in the manner indicated above.

In establishing the standard operating conditions the use of a typical set of data as shown in Table I should be convenient. It will be noticed that the gamma product obtained from

TABLE I

Exposure and Development Data

	Minimum density	Maximum density	Density scale
Original Negative	0.40	1.40	1 00
Master Positive	0.70	1 95	1 25
Printed on Emulsion *1365*			
Step Printer: 15 Ft. per Min.			
500-watt lamp: 85 volts			
Meter-Candle-Seconds: 400			
Developed in *D-76d*, ⅔ strength, 70° F. 4¾ Min.			
Gamma · 1.25			
Duplicate Negative	0.45	1 30	0 85
Printed on Emulsion *1203*			
Step Printer· 15 Ft per Min.			
500-watt lamp: 60 volts			
Meter-Candle-Seconds: 150			
Developed in *D-76d*, ⅔ strength, 70° F. 3½ Min.			
Gamma: 0.65			

the master positive and duplicate negative gammas (*IIb* sensitometer), which might have been expected to be unity, is actually about 0 81.

If local conditions favor the use of other developers or different gammas at either step in the process, then control values should be determined for those conditions by carrying test samples through the complete duplicating process. Adjustments should be made in one step or the other until proof prints from the original and duplicate negatives developed together indicate equal effective printing contrasts in those negatives

If it is considered advisable to utilize portions of the density-log exposure characteristic lying outside the straight-line portion, then new standard control conditions must be adopted. When a change of this kind is made in the master positive exposure, then compensatory changes in the development of the master positive and the duplicate negative and in the exposure of the duplicate negative are necessary, if an acceptable reproduction of tone is to be retained.

In working out the new conditions discussed in the preceding paragraph, a density step-tablet should be attached to the original negative and should be reproduced with picture tests in all succeeding steps. Prints from the tablets in the original and duplicate negatives will furnish data for reproduction curves prepared in the manner suggested in a previous paper.[9] A more complete analysis of the effect of changes in procedure in any step can be obtained through the use of a method for the study of tone reproduction described by L. A Jones.[10]

As stated in connection with the printing of the master positive, the printing equipment must be capable of giving uniform exposure and good definition. It is anticipated that the process of printing the duplicate negative will frequently involve optical printing and that it may be required to produce duplicate negatives of equal quality by optical and contact printing. With optical systems where illumination is strongly specular the contrast obtained in projection printing is greater than that in contact printing. When printing from a *1365* master positive this increase in contrast may not be of the same magnitude as with materials previously used. It may be necessary, therefore, to make an adjustment in the development contrast of the duplicate negative or to modify the illumination system of the optical printer in the manner described by Tuttle and Young[11] in order to obtain the required agreement in contrast. As stated previously, the printing contrast of a duplicate negative must be judged from the prints which it yields in comparison with prints from the original negative.

When the negative is exposed in such a way as to utilize the straight-line portion of the Duplicating Negative characteristic, the duplicate negative will usually have greater effective printing density than an original negative in which very low densities are found

(*b*) *Processing*—As in the case of the Duplicating Positive, a modification of the *D-76* developer can be used to advantage. Unless the development gamma for the duplicate negative is greatly different from that recommended, the same developer can be used as for the master positive. If a different developer activity is required for this or other reasons, it can be obtained in the manner suggested previously.

The developer used for Duplicating Negative Film should not be permitted to vary greatly in its exhaustion level. If it is attempted to compensate for extremely different degrees of exhaustion by varying the time of treatment, the image color may be affected in such a way as to alter the effective contrast for a stated development gamma.

In a fresh fixing bath of the *F-25* type, emulsion *1203* is fixed completely in 4 minutes. As recommended previously, necessary steps should be taken to avoid excessive hardening.

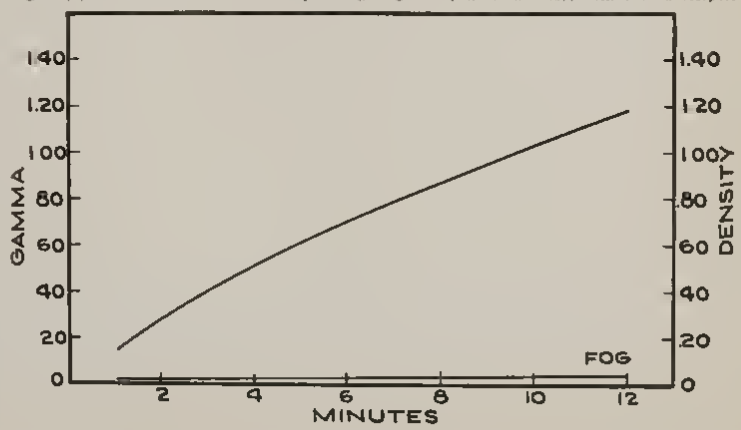
(VI) GENERAL RECOMMENDATIONS

Duplicating Negative emulsion *1203* can be used for making duplicate negatives from any master positive but results are best when Duplicating Positive emulsion *1365* is employed.

It has been found possible with the exercise of reasonable care to make duplicate negatives by the use of these new materials which will yield prints practically indistinguishable from those made from an original negative However, a duplicate negative is acceptable for release printing only if scratches, abrasion marks, dirt spots, and unevenness in density accumulated throughout the process are held to the lowest possible amount by the exercise of due

(Continued to Page 369)

Fig 2 (b). Time-Gamma curve of Duplicating Negative (Emulsion 1203), with D-76 developer.



MODERN

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EASTMAN *Fine-Grain*

DUPLICATING FILMS

PENETRATION

Cameramen on location in the desert near Yuma, Arizona, are working under difficulties in shooting this scene from the Technicolor production, "The Garden of Allah." Marlene Dietrich and Charles Boyer co-star in this David O. Selznick production, under the direction of Richard Boleslawski. Howard Greene, Photographer; Hal Rosson, Photographic adviser; W. A. Oettel, Studio Chief Electrician.

Exceptional penetration and carrying power are required of a light source to pierce the obscuring clouds of a sand storm on the desert, but the carbon arc proved equal to the task.

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TELEVISION WILL SUPPLEMENT BUT WON'T SUPPLANT

Abridged from a paper presented at the Spring Convention of the Society of Motion Picture Engineers, held in Hollywood, May, 1937.

NOTE—One of the conclusions of Mr. Beal is that, although some parts of television's program technique may parallel the technique of the stage, of motion pictures and of sound broadcasting, it will be distinctive from any of these. Another conclusion is that television will supplement and not supplant existing services or agencies which represent the older arts.

By R. R. BEAL

Research Supervisor, Radio Corporation of America

In Two Parts—Part II

THE amount of detail which can be transmitted by a television system depends upon the number of picture elements resulting from the scanning process. It is apparent that the number of picture elements, hence the amount of detail, increases with the number of scanning lines. The Iconoscope mosaic does not limit the amount of detail which can be transmitted because many tiny photosensitive elements in the mosaic contribute to a single picture element.

Pictures of less than 60 lines were used in early experimental systems. Through the electronic system embodying the Iconoscope and other electronic devices pictures of satisfactory detail are produced with 441 scanning lines. This amount of detail corresponds approximately to that obtained with 16mm. motion picture film.

Continuity of motion in either motion pictures or television is maintained when a minimum repetition rate of 16 pictures or frames per second is used. A repetition rate of at least 48 pictures per second is required to minimize flicker unless some artifice like the motion picture projector's flicker-blade is employed. The RCA system employs interlaced scanning to obtain satisfactory freedom from flicker.

Instead of scanning the picture in adjacent lines from top to bottom alternate lines covering the entire area of the picture are first scanned and then the beam returns and scans the omitted lines.

The entire picture is scanned 30 times a second, but the picture is covered in alternate lines 60 times a second. The system is designed for operation on a 60-cycle power supply.

Thirty Pictures a Second

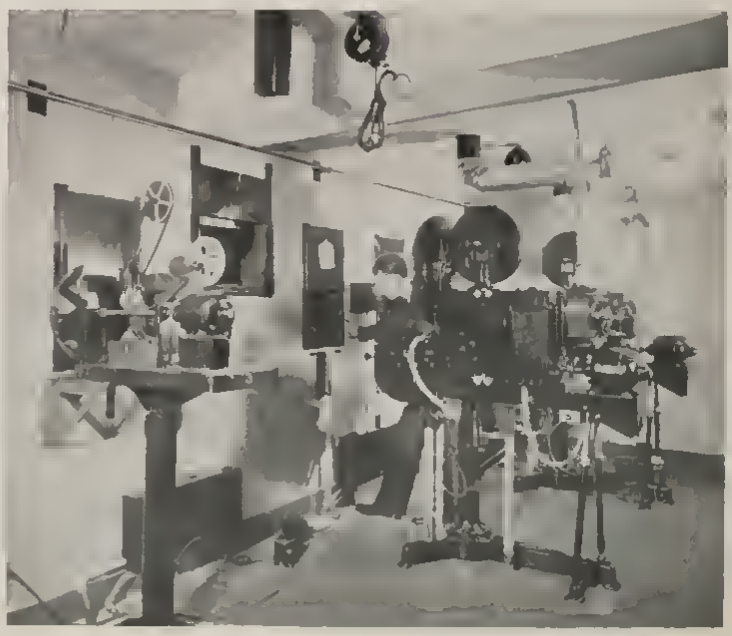
A high definition television system requires very wide frequency band apparatus and circuits. This is occasioned by the rate at which information must be transmitted concerning the brightness of a large number of picture elements.

With 30 pictures a second information must be transmittted concerning the brightness of 4,978,710 picture elements a second. Since one cycle of the picture signal provides such information for two picture elements, the total frequency band required is about 2,500,000 cycles. This is the frequency band which must be handled by the apparatus and circuits in the system.

It is the frequency band by which the carrier wave of the radio transmitter must be modulated. The width of the radio transmitting channel will be 5,000,000 cycles, which is equal to the combined widths of 500 sound broadcasting channels of 10,000 cycles each.

Channels of such great width are not available in the radio frequency spectrum now used for radio services. For this and other reasons related to technical requirements, the ultra high frequency portion of the radio frequency spectrum is used for television.

These ultra short waves have quasi-



Film Projector Equipment

optical properties in propagation. Their effective transmitting range is limited practically to the horizon from the height at which the transmitting antenna is placed.

In the studio, several Iconoscope cameras are employed for picking up close-up and distant views to be transmitted in sequence by switching from one camera to the other. The switching operation takes place in the studio control booth, which is located in an elevated position at one end of the studio. The sound which accompanies the picture is picked up by a standard velocity microphone equipped with a wind shield and attached to a boom.

The direct pick-up studio at Radio City is about 30 by 50 feet with a ceiling height of about 18 feet. It is an NBC studio formerly used for sound broadcasting. Three of the studio walls are coated with aluminum paint, and the fourth is painted black to increase light absorption and thereby eliminate interference with the operation of background projection apparatus.

How Studio Is Equipped

The studio is equipped with incandescent lamps of various types, having a total power consumption of more than 50 KW. The lighting equipment is flexible to enable comprehensive studies of a variety of effects in experimental programs. Rifles, floods and focusing spots with ratings of between 2 to 5 KW are most numerous, although there are several large units of special design. Key lighting and back lighting units are suspended from the ceiling; modeling lights are operated on the studio floor. The present sensitivity of the Iconoscope requires an incident light intensity on a set of about 1000 to 2000 foot-candles.

The transmission of motion picture film material originates in a film studio in another part of the National Broadcasting Company plant. This studio consists of two rooms, in one of which are installed two special 35mm. motion picture projectors and other supplementary equipment, and in the other two Iconoscope cameras with video (picture-signal) monitoring and control apparatus.

Standard 24-Frame Film

The projectors are so arranged that they can be used with standard 24-frame motion picture film to produce television pictures at 30 frames a second. This is accomplished as follows: The Iconoscope beam is deflected in the vertical direction 60 times a second. The motion picture frame is projected on the mosaic only during the time the beam is returning from its vertical sweep.

The first motion picture frame is projected on the mosaic for a very short interval of time twice in succession, the second frame three times, the third frame twice, and so on to repeat the cycle. Thus, while the television frame time is 2 x one-sixtieth second or one-thirtieth second, the film frame time is 5 x 1/60th or 1/24th of a second.

The experimental field test receivers resemble in appearance a console broadcast receiver. This receiver is of the superheterodyne type and has a tuning range of 40 to 84 megacycles. It receives the pictures and the sound simultaneously.

Various Controls

The Kiescope is mounted vertically and the television image is viewed in the mirror mounted inside the cover of the cabinet. Tuning is accomplished by a single knob controlling the radio frequency circuit and the single oscillator which heterodynes both carriers to produce two intermediate frequencies.

Of the seven knobs on the front of the receiver the center knob tunes the picture and the accompanying sound. The three knobs on the right, from top to bottom, are the sound volume control, the treble tone control and the bass tone control.

The three knobs on the left, from top to bottom, are the picture contrast control, the detail control and the background brightness control. These receivers operate on the ordinary 110 volt, 60 cycle power supply, and draw about 350 watts of power.

These receivers have been used to produce two sizes of pictures. For the first few months of the tests, the picture size was 5¼ by 7½ inches. At the present time most of the receivers have Kinescopes which produce pictures 7½ by 10 inches in size. The shape of the picture, defined by the aspect ratio 4 to 3, is the same as that used in motion picture practice.

The brightness of the reproduced picture is such that it can be viewed in a moderately darkened room. The color of the Kinescope screen depends upon the composition of the fluorescent materials. Many colors have been produced. At the present time a slightly greenish yellow screen used for the 7½ by 10 inch picture has a brightness in the high lights of about 4 foot lamberts. This may be compared with the tentative proposed standards of 7 to 14 foot lamberts for the brightness of motion picture screens.

Supplement and Not Supplant

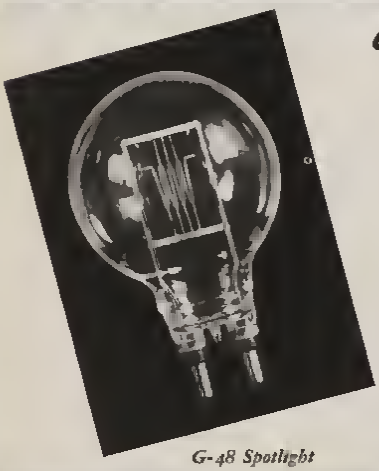
The optimum viewing distance for a 441 line picture of the 7½ by 10 inch size is in the order of three to four feet. At this distance the line structure is not resolved by the eye. The screen angle or the angle subtended by the picture at the eye is about 20 degrees.

At a viewing distance of 12 feet the screen angle is about 5 degrees, which in general is in the order of

(Continued on Page 377)

Film Studio Control Room

OFFSTAGE SCENE FROM THE NEW COLUMBIA PICTURES' PRODUCTION "PARK AVENUE DAME" *(tentative title)* **. . .** ***with Fay Wray and Richard Arlen***



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Two New Films

(Continued from Page 363)

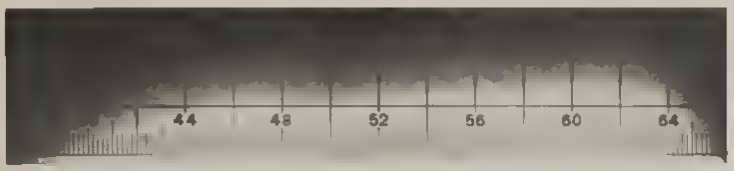

Fig. 3 Spectral sensitivity of Duplicating Negative Film.

care in handling and processing operations. It is recommended, therefore, that all necessary aids to better processing such as those involving supplemental agitation in the developing bath and the use of an acid stop-bath be adopted.

Cinching can be diminished by carrying out all winding operations in sufficiently moist clean air and by winding firm rolls. Duplicating films show finger prints and other handling marks rather prominently on account of the smooth glossy emulsion surface.

Cleaning operations should be carried out in such a way as to avoid solvent spotting or the condensation of atmospheric moisture. Also, attention should be given to the equipment used for cleaning and to the choice of cleaning pads.

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Landers and Trissel Open Camera Rental Business

Landers and Trissel Inc. has been organized to do a camera rental business and designed to supply complete equipment to studios. The plant is at 6313 Sunset Boulevard, in Hollywood.

Sam Landers, A.S.C., and Howard R. Trissel are behind the names in the company. The former during the past quarter century has been connected with practically all the studios in a photographic capacity. Trissel for many years was with the Mitchell camera in the western territory, gaining wide experience in the sales and service department of that company. In fact, it is the intention of the new firm to specialize in expert work on the Mitchell.

Agfa Division Manager Gravely Injured in Smash

E. M. St. Clair, western division manager for Agfa, was gravely injured in an automobile collision July 31. He was passing through Burbank returning from a business trip in San Francisco when hit. He did not recover consciousness until August 22. Five days later he was believed to be on the road to recovery barring unforeseen developments, a recovery that for a long time seemed in doubt. Gradually he is recovering his memory.

Much concern has been expressed by the trade during the course of the slow recuperation of the Agfa official, who has been with his company for twenty-six years. He has a host of friend, who have kept close tabs on his fight for life.

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A. S. C. MEMBERS ON PARADE

• **Farciot Edouart, A.S.C.,** is another of the Paramountaineers who has helped Bing Crosby and Bill LeBaron make a success of the Del Mar racing plant. Farciot and Lorenzo Del Riccio are revealed as co-designers of the plant's "photo-finish" camera system, which records the finish of every race and delivers an enlarged print to the judges within a few minutes of the time the nags cross the tape, also providing a 15 foot projected image for the betting customers.

Revolutionary principles are involved in this new system, which will be described here as soon as Edouart and Del Riccio secure patents now pending.

P. S.—Farciot has been so busy at the studio he has seen his camera—and the hosses—in action only thrice since the plant was opened!

▼

• **Phil Chancellor, A.S.C.,** is the latest A.S.C. convert to 8mm. movie making. He carries an "8" on his boat and says the cinebox already has paid for itself. It seems on a recent cruise to Santa Barbara Phil's sloop fell in with a yacht the owners of which took inordinate pride in their craft's speed. Slapping on all sail, Phil showed the racer a clean pair of heels and led it into port. The yacht's owners swore it was one of those things that just couldn't happen—but Phil has proof on 8mm. film that it could and did.

▼

• **Hal Mohr, A.S.C.,** and Mrs. Mohr (Evelyn Venable) have been spending a vacation in Northern California visiting relatives

▼

• **Hal Rosson, A.S.C.,** is off for England to direct photography on MGM's first production in the right little, tight little island

▼

• **Joe Valentine, A.S.C.,** is smiling, somewhat broadly, as he contemplates his new contract at Universal

▼

• **Edward Snyder, A.S.C.,** is sewed up at Twentieth Century-Fox in another one of those bags the fabric of which is gold.

▼

• **Charles Marshall, A.S.C.,** was one of the many who joined in the hunt for the missing Russian flyers. He went to Alaska with Jimmy Mattern. As a part of his impedimenta he carried 10,000 feet of film. Equipped with the latest type aerial and studio motion picture cameras he was prepared to record any happenings in the Arctic that might fall to his lot.

▼

• **Tony Gaudio, A.S.C.,** is shooting "Robin Hood" in Technicolor. Providing what we are told is true if Tony can cause that bird to look red in the face he will be the first of record who ever succeeded in so doing.

▼

• **George Folsey, A.S.C.,** slid up to Arrowhead for a bit of recreation.

▼

• **Charles Lawton, Jr., A.S.C.,** reveals his marriage last April to Irene Thompson, actress. A few of us shared the secret with you, Charles, but followed your wishes. Now we

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may take the liberty of speaking for the members of the society in extending to you both every good wish.

▼

• **John Arnold, A.S.C.,** had a lot of fun on his two weeks' vacation—and he did not go into strange parts or places to get it. He remained at home in comfort and played golf whenever the sun would permit. We submit that tells a story of a real golfer—one who not only likes the game. Also he likes his home course.

▼

• **Rudolph Mate, A.S.C.,** has been receiving the sincere sympathy of the membership in the passing on August 20 of his wife at St. Vincents Hospital. She had been ill but a short time from pneumonia. Mrs. Mate had been an actress, appearing in both French and German films.

▼

• **Victor Milner, A.S.C.,** for years a driver of one of the cars made famous by Henry, is behind the wheel of a different brand of machine equally famed these days. Now while we should refrain from encroaching on the advertising department we will go so far as to express the hope the Howard Auto Company in its service will match the famous V8 dealers in the same w. k. manner to which Vic has been accustomed over a period of—oh, well, it's a long time surely.

▼

• **Edward O. Blackburn, A.S.C.,** is receiving the felicitations of his friends over the observance of the twentieth anniversary of the establishment of the western branch of the house of Brulatour. The felicitations are for the head of the house in New York as well as for Eddie himself.

It is more than a half of these two decades that E. O. has been at the head of the local branch, which has thrived under his hand. We have no hesitation in asserting the members of the A. S. C. will join us in wishing for the regime of Brulatour another double eagle of golden years—gold in the form of health above all—both for the chief and for the skipper and the gallant crew whose ship hails from Santa Monica and Las Palmas.

LEN ROOS COMES TO UNITED STATES TO SECURE EQUIPMENT FOR MALAYAN

LEN ROOS, A.S.C., F.R.P.S. arrived in Los Angeles July 29 out of Singapore July 2. He came in the interest of Malayan Films Ltd., of which company he is general manager and director and for which he came to the United States to buy laboratory and studio equipment.

The other directors of this Singapore company, which is incorporated in the Straits Settlements, are H.R.H. Prince Sobhon Svasti, S. K. Ebata and S. Sk Alkaff. The Malayan primarily is a laboratory and designed to give its producing customers an opportunity of seeing their rushes each day following exposure just as in Hollywood.

Before leaving for the East, from which Roos returned in time to sail for Singapore August 18, he entered into a reciprocal arrangement with Fred W. Jackman under which Malayan undertakes to secure in its territory such material as Jackman may there require.

The laboratory-studio will make three native pictures each year as well as do laboratory work for American newsreels.

When Roos lands back in Singapore September 16 he will have traveled more than 30,000 miles in the preceding two and a half months. Mileage, however, is something to which this cameraman-laboratory chief is quite accustomed. He has been traveling to the East since 1927. Before taking on his present affiliation he photographed a series of twelve Colortour shorts for E. M. Newman. They were in Cinecolor and were released by Warner Brothers.

Pupils Make Sound Movie

At Purdue University a group of students have just completed a fifteen minute sound movie, in conjunction with the Outdoor Songfest, using a 16 mm RCA Sound on Film Camera distributed by the Bass Camera Company of Chicago.

The completed picture was shown before an audience of 4000 and was favorably received.

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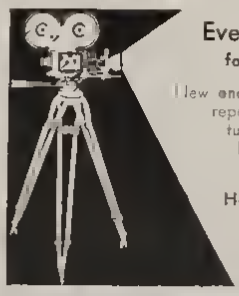

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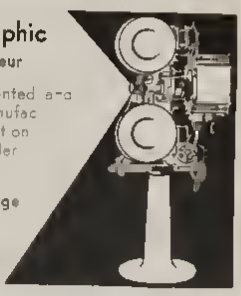

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MGM TO MAKE WIDE USE OF TONE-TINT MERGING

John M. Nickolaus of That Studio Laboratory Discusses Return to Screen of Factor That Made for Better Films

THE recent announcement that the Metro-Goldwyn-Mayer studio is constructing an addition to its studio laboratory to house a new department for toning and tinting release prints vindicates an opinion which many notable authorities have frequently expressed in print and otherwise for many years

Briefly stated, that opinion is that since the coming of sound producers have neglected a tremendous means of increasing the emotional appeal of their films in neglecting the emotional appeal of tinted and toned film

Tinting and toning motion picture film is no new thing. In the days before the Vitaphone this technique had developed to a relatively high degree Many of the greatest productions of the silent days owed more than a little of their emotional appeal to the aid of color in the form of tones and tints

At that time, however, toning and tinting were limited by the fundamental limitations imposed by the then crude technique of making conventional black-and-white prints. Control, in the sense implied by today's scientific accuracy, was unknown in the developing and printing methods then used.

Accuracy and Uniformity

The best laboratories could not turn out prints of the quality now taken for granted. Uniformity of release prints was utterly impossible in those days of visual print-timing and rack-and-tank development. Toning inevitably suffered from these inescapable weaknesses.

Today's toning as carried on under the direction of John M. Nickolaus at the M-G-M Laboratory is a vastly different thing The foundation of the toning job—the black-and-white print—is now made with a scientific accuracy that gets the best out of the negative.

Printing is done on the most modern Bell & Howell production printers, and the film is of course machine developed, while the entire process is subject to such accurate sensitometric control that any number of absolutely identical prints of any picture may be obtained.

The tinting and toning operations are carried out with the same accuracy. The work is done on machines, of course. These toning machines are essentially similar to the studio's standard developing machines, but with the tanks rearranged to be suitable for the processes involved

The speed of the machines is necessarily variable over an exceptionally wide range, to allow both for the various solutions which could possibly be desired, and for the necessary control.

In some respects the machines for toning are simpler than conventional developing machines. Turbulation is not required, nor is a solution circulating system The solution is of course refreshed with metered quantities of a concentrated solution at fixed intervals. The life of the solutions seems practically indefinite.

Temperature must be very accurately controlled. It is also extremely important that all parts of the machines in contact with the solutions be chemically impervious to the various solutions, neither being affected by the solutions nor contaminating them.

These operations may be carried out at any time after development of

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the print, and in a lighted room. Therefore the toning machines are in a separate section of the laboratory, and the prints are developed, fixed, washed and completely dried before the toning or tinting operations.

The tone most generally used at present is a single solution uranium tone, often in combination with tints. In this connection it should be remembered that a toned image is one in which the silver image itself is colored while the highlights remain clear, while a tinted image is one in which the silver grains are not colored but the gelatin support carries an overall color so that highlights and all appear colored.

Effects of Infinite Variety

Multiple tones and multiple tone-and-tint combinations allow infinitely varied effects in which the highlights are one color, the halftones another, and the shadows yet a third color

The most recent example of this technique, "The Firefly," made extensive use of such combinations as sepia-pink; sepia-orange, sepia-blue-pink, etc. Certain romantic night exteriors, for instance, made extensive use of the latter combination and produced night effects which absolutely could not be approached in ordinary black-and-white

Speaking of this new technique of coloring monochrome films, John Nickolaus, superintendent of M-G-M's laboratory and chief proponent of the process, says: "Many of the emotional moods which motion pictures seek to portray cannot always be depicted to their fullest extent by the gray tones of normal black-and-white photography, since gray tones can have a very sobering effect upon the observer.

"While gray no doubt enhances certain moods, by no means all scenes are keyed to those moods, and a more fitting tone becomes desirable. When the studio was planning 'The Good Earth' it was felt that normal black and white photography could not convey the desired mood satisfactorily. Searching for a means to produce the desired effect, the subject of toning was considered, was finally adopted, and all prints of the production were toned throughout

No Indiscriminate Toning

"This was so satisfactory that all or parts of several other pictures have been toned, and this policy will be followed wherever it seems desirable on future productions."

Nickolaus emphasizes that simply because some pictures have been toned it does not by any means follow that with the completion of the new toning plant they will tone all productions indiscriminately. On the contrary, they will tone only those productions or sequences they are confident will be definitely improved by the toning.

He points out that toning and tinting must be used with artistic as well as technical care, and where this artistic care does not govern the application of the process pictures unsuited for toning and pictures wrongly toned will inevitably be harmed by the process as much as pictures suited for toning will be helped by it.

"Toning", he states, "requires careful planning on the part of all concerned. It is as much the cinematographer's problem as the laboratory's. If the cinematographer will acquaint himself with the possibilities toning offers for enhancing his work he can not only so plan his scenes they will be more suitable for toning, but he can often suggest possible tone combinations which we in the laboratory might overlook.

"Toning is in itself nothing new But toning as we are trying to use it today at M-G-M is new in several major respects. We have learned how to control both the printing process and the toning operation with scientific precision. Accordingly we can not only get better tones but we can get them uniformly and consistently.

"Further, the whole technique of the screen has been enormously refined. So is our application of toning, we no longer seek to get our toned effects over to the audience with sledgehammer blows. We actually don't want them to notice the color consciously. If they do it is bad. Like good camerawork, toning must fit so perfectly into the dramatic mood of

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the sequence that the audience is only sub-consciously aware of it, thinking only that the picture is emotionally satisfying."

Nickolaus feels that his efforts have scarcely begun to explore the potentialities of this technique. They have tried and used a good variety of tones and tone-tint combinations on the relatively few pictures so far colored. But there are infinitely more, he says, that they have not as yet had occasion to use!

For the Expert Alone

If one doubts this, let him refer to "Tinting and Toning of Eastman Positive Motion Picture Film" (Eastman Kodak Co., 1927). Those who wish more detailed information about toning formulae, incidentally, will find in this book, and also in "The Cinematographic Annual," the basic formulae from which Nickolaus worked.

Technical knowledge of the action of the various toners is vital. Some, for instance, intensify; others reduce. Moreover, the gamma of the black-and-white print which is to be toned, together with the time of toning, has an enormous influence upon the final result. It is possible without changing the normal uranium toning solution to produce a wide range of tones from an almost imperceptible grayish-brown through stronger browns to a warm reddish brown. This is simply in control of gamma and toning time. Obviously, prints designed for toning will have to be made with even more care than if they were to be used without toning.

So far as has yet been learned toning has no adverse influence upon any phase of the print's usefulness. To put it conservatively, the toning or tinting has no effect upon the quality or volume of the recorded sound. As to the effect of toning on the life of prints, reports from the exchanges which have handled the approximately 500 completely toned release prints of "The Good Earth" indicate that properly toned prints actually have a longer life than untoned ones. This is to be expected, for toning is in effect a tanning operation.

"Finally," Nickolaus urges, "let me make it very clear that our toning and tinting is not in any sense an imitation of or a substitute for natural color photography. Tinting and toning, however, enable us immediately to add to any black-and-white production which needs it the emotional enhancement of a tone mood."

▼

Television Will Supplement

(Continued from Page 3671

magnitude of the minimum acceptable screen angle in motion pictures. The size and brightness of the 7½ by 10 inch picture of 441 lines appears reasonably to satisfy the requirements for pictures to be viewed in the home by the average family group.

In connection with television program technique it is too early accurately to predict the technique which ultimately will develop in television programming. It is clear to those who are closely associated in the development of a system eventually to be applied in a service that, although some parts of the program technique may parallel the techniques of the stage, motion pictures and sound broadcasting, it will be distinctive from any of these.

This new service, just as have many new services in the past, will supplement and not supplant existing services or agencies which represent the older arts. The telephone did not supplant the telegraph; it supplemented it.

Sound broadcasting did not supplant the theatre and motion picture. On the contrary, it increased public interest and appeal in them and thereby contributed to their advancement and financial profit.

And so it will be with television. When it is successfully accomplished we will have added another service to the continually growing list. There will be some things which television can do that previous arts cannot do; a few things which it can do better than they; but there will be many things which they can continue to do which television cannot do.

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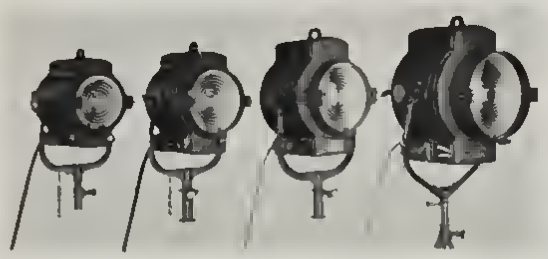

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GERMANS MAKE GAINS

ON the occasion of a joint meeting in Berlin, of the Deutsche Gesellschaft fuer Stereoskopie (German Society for Stereoscopy) and the Deutsche Kinotechnische Gesellschaft (German Cine-technical Corporation), as reported by Assistant Commercial Attache R M. Stephenson, Professor Dr. Bernauer of the Technical High school of Berlin-Charlottenburg explained the Zeiss Ikon stereoscopic film process.

Recently the Zeiss Ikon concern has developed a process by which it is possible to make stereoscopic pictures of the usual horizontal shape common to other photography instead of the vertical form heretofore resulting from the taking of two exposures of the normal film.

By this process and using the Ufa two-color method, a new sound film has been manufactured which is said to be the first stereoscopic colored sound film ever shown The effect is said to be very satisfactory, especially the colors.

▼

X-RAYS ON CINE FILM

After ten years work the German industry has succeeded in constructing an apparatus which makes it possible to take X-rays on cinema film. Such subjects could previously only be shown on a screen

The first X-ray films were taken in the surgical department of the University in Bonn in the X-rays laboratory of Professor Jauker.

The cultural department of the Ufa, in cooperation with the Federal Department for Educational Films, has recently taken the first X-ray film for public release The film was produced under the supervision of Dr. Martin Rikli of Ufa.

For this purpose a special lens was made giving a light intensity of 1:0.85 and to obtain maximum clearness 16 X-ray tubes were employed.

The University of Bonn and the cultural department of the Ufa are now planning the production of sound X-ray films.

▼

PHONORHYTHMIE, NEW DUBBING

Karl Robert Blum, of Blum & Co., GmbH, Friedrichstrasse 22, Berlin SW 68, has developed a process called "phonorhythmie" by which it is possible to produce sound films in any number of languages using only one sound strip.

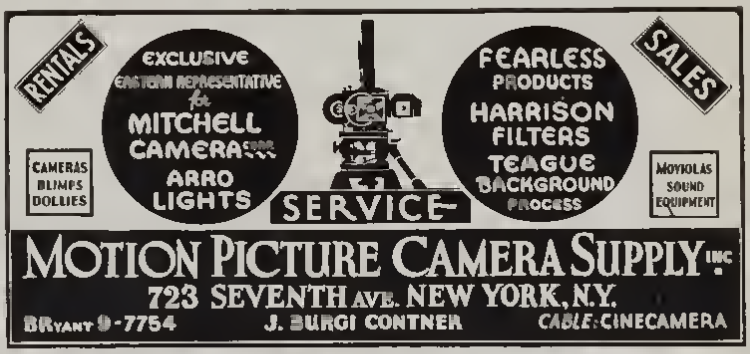
In this new process sound and pictures are shot separately. The text for all languages is recorded before the shooting of the pictures begins and the pictures are then synchronized (by a special procedure) with the sound film The sound is recorded in two parts, one strip for the music and noises and one for the language These strips are then mixed and copied on the picture strip

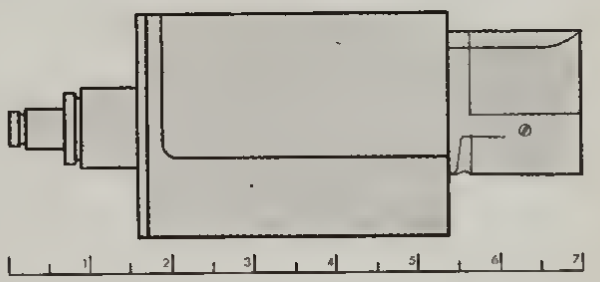
The inventor claims that by this method it will be easy to replace a good singer who is a poor actor by a good actor, recording only the singer's voice.

It is also claimed that by this method costs may be reduced by 25 to 30 percent through saving in materials, time and employment over the usual dubbing methods

So far only short films produced by this method have been shown privately in Germany. A long feature film, however, is in preparation which is intended to be produced in 11 languages

The process is fully covered by German and foreign patents.





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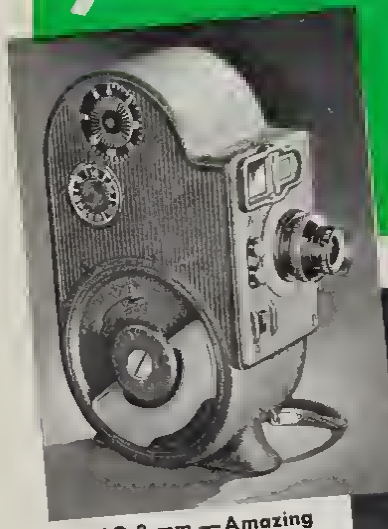

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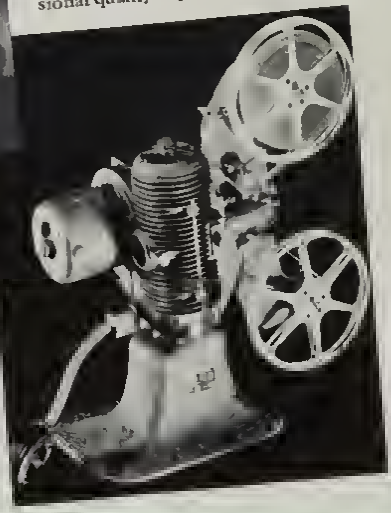

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BUSINESS MAN'S SHOW HAS CHARM

Fred Champion Entertains Cinema Club with Two Thousand Feet of Unusually Fine Kodachrome Shot in British Isles

WHAT may be achieved by an active business man in the way of providing unusual and even rare entertainment photographically was shown at the August meeting of the Los Angeles Cinema Club. Fred Champion, official of one of California's largest corporations, put on the screen at the Bell and Howell auditorium two thousand feet of excellent Kodachrome.

The exhibit represented 90 percent of the film he has exposed during a two months' trip abroad early this summer. Incidentally it may be mentioned in passing that the cinematographer confesses under pressure he did not destroy the discarded 10 percent As a matter of fact, he very carefully preserved it. But he has been making motion picture for ten years.

The pictures shown were of the coronation, rarely good in spite of the rain—or as the vacationer inclines to believe because of the rain, because of the remarkable clarifying effect of the precipitation upon the atmosphere and the consequent definition of the picture.

To See Coronation

Following the coronation there were intimate shots around London and in the nearby towns There was a jump to Glasgow and its environs, to Edinburgh and its neighborhood and then a drop south to mid-England, followed by a brief trip to France.

Perhaps the major feature of the showing was the footage devoted to rural life in England and Scotland—accentuated in interest and in charm by the remarkably vivid shades of green that just naturally cling to the countrysides of these venerable northern lands.

The decision of Mr. and Mrs. Champion to take in the coronation was somewhat suddenly reached. In the first place after coming to the conclusion it would be a desirable trip there was the matter of accommodations, of a suitable hotel in the crowded city and the even more important question of a stand from which to view—and also of real importance the matter of photographing—the pageant

But the arrangements were made—first for a hotel and then for a good place in the Westminster Abbey stand. The Champions left Los Angeles April 27. With them went a candid camera, which as it turned out did not get much of a play, the answer being its owner came to the conclusion he could better handle one camera at a time; Cine Special, Eastman magazine camera, Weston Universal meter and the new Harrison filters. Of course, there was a tripod, which was employed when possible. As for the meter, that was used consistently. And there was an allotment of 2200 feet of film, all color.

In spite of their fears regarding accommodations it was found by the Champions that from the Abbey stand there would be opportunities for close-ups—and they are in the film. Then again of course there was a chance to see the notables departing from as well as entering the Abbey.

In view of the quality of the photography secured in the rainfalls, when the tourist was asked if he did not believe he would have experienced difficulty in getting equal results in black and white under the same handicaps he replied that possibly he might have.

Good Shots in Rain

"It is my experience," he said, "that with color we may get much on the film even though weather conditions are far from ideal. Of course, in my two months' trip I took a great many shots in bad weather. If a man is traveling and chooses to keep moving he is not going to have things his own way when photographing.

"If he wants a record of a certain spot he cannot afford to wait for the weather to clear. Or if he be planted

The lord of the flock of Highland sheep of which one is shown on the left is rated at the equivalent of $500 American gold. At the right in this charming rural setting in the Trossachs of Scotland are mother and offspring, representatives of Highland cattle that are disappearing.—From 16mm Kodachrome film exposed by Mr Champion on his trip this summer.

At the left is a young representative of the Buchanan clan, holding the hand, at his left, of a grown-up member of the same clan. At the right is another spokesman for Bonnie Scotland one who most effortlessly matches famous predecessors in song and story.
—From 16mm Kodachrome film

on the hurricane deck of a bus he cannot set up a tripod The photographer must keep going while the going is good or at least as good as he can get it

"For some time I have had a feeling perhaps amateurs are too timid where rain or overcast conditions are present. I know for a fact that some of my best results have been secured during rain or immediately following, even when the skies are overcast. Naturally the rain washes out of the air a lot of the dust and eliminates the haze, to the betterment of the film. We know right in this town how clearly the hills stand out the morning after a rain.

"There may have been a time when I would not have exposed Kodachrome film unless the sun was shining. I think now that is a fallacy. I'll go ahead and take a chance."

The twilight in England, owing to its northern latitude, remains to a late hour and fades very slowly. At the time the Champions were there, May and June, there was sufficient light to take pictures, even with Kodachrome, until 9 o'clock in the evening.

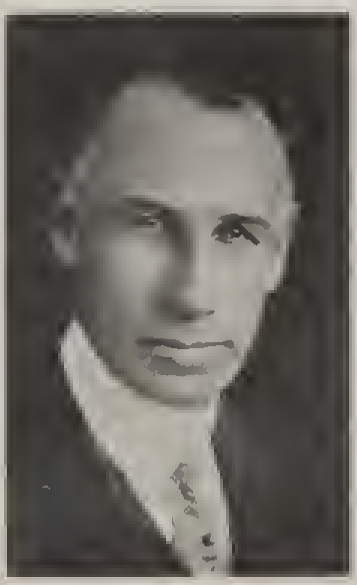
First Use of Filters

Mr Champion remarked that some of his shots of the early morning or late afternoon or early evening seemed to bring out the color more vividly than was to be noted in those taken in the middle of the day. What impresses, he declared, is the brilliance of the greens.

"Mrs. Champion," he went on, "detects color values more quickly than I do. She particularly remarked about the greens, especially in the southwest of England, in Devonshire and Cornwall, and in Scotland between Glasgow and Edinburgh, in the lake county and the Trossachs."

The photographer said he used the Harrison filters on this trip for the first time. He had noted that during the morning hours and in the afternoon, due possibly to the sun being nearer the horizon and thereby bringing out the red more prominently, there was a difference in the color balance obtaining in the middle of the day While the film remained constant the light factors did not.

In using the light-meter he employed both 8 and 10 film speed, but seemed to get the best result from 10.



Fred Champion

The pictures were taken from taxi, train, boat or bus. In the case of the latter it was found best to take them head on or at an angle closely approximating the direction in which he was traveling so as to get away from jumpy conditions and to rest the camera against some portion of the vehicle, thereby getting a steadier platform and avoiding some vibration.

The Champions did not take an automobile with them While it was admitted there were advantages in taking one, it was pointed out there were many ways of getting around with facility and not necessarily expensively. The uniform rate for taxis as they found it in Scotland as well as in England was the equivalent of 12 cents a mile.

Palms in England

After the coronation the visitors spent several days around London, with which they were fascinated. Their shots of the Poor Man's Market constitute a sequence of unusual interest. They traveled along the Thames and through the Surrey hills thirty miles out.

They journeyed to Glasgow by train. They enjoyed excursions on the Clyde and the Firth of Clyde. Then they went to Edinburgh, and later south to Bristol, where they made their headquarters. It was in the southwest of England, however, the travelers found what appealed to them as the spots with the more charm

These were in Devonshire and Cornwall, which they declare to be acknowledged even by Englishmen to be the most attractive from the scenic viewpoint of any place in the British Isles. The climate is exceedingly mild, in fact semi-tropical, as attested by the presence of semi-tropical plants and trees. One of the principal streets

Shooting into the sun at St. Michel's Mount. On the right is coach containing Queen Elizabeth and Queen Mary with the two princesses. —Enlarged from 16mm. Kodachrome film.

in Falmouth is lined on each side with a fine display of royal palms

On the weather as a whole there was no complaint. They had picked what was admittedly the good months of the year. In Scotland they found weather that compared with their home brand.

Asked as to the attitude of the Englishmen toward foreigners with cameras Mr. Champion said it was ideal.

"For the amateur taking a camera into the British Isles," he explained, "there is absolutely no difficulty from the standpoint of the customs or the authorities or the man in the street, if you observe the ordinary rules of courtesy. All of the people are very fine to you and readily give you assistance in taking pictures. I found everybody very cordial.

"There is one thing, of course, if the courtesies are ignored there will be resentment, as is to be expected. Englishmen by nature are dignified. If first you will seek permission to do the things you may wish to do you will find cooperation 100 percent."

G. B.

PHOTO PRODUCT MAY BE BOUGHT ON TIME

Leica Joins B. & H. and Eastman In Taking Over Deferred Payments

THE prospective purchaser of photographic equipment will now be able to secure the particular item of commerce he most desires at the moment without digging too deeply into his jeans — at the moment. He may secure it on time.

Of course, in the case of two of the largest equipment manufacturers and dealers that course has been open to him for some time. It seems, however, a comparatively few persons were aware of the fact.

The whole matter came into the open when E. Leitz, Inc., made public a statement reading substantially as follows.

"For the thousands who wish to extend their photographic scope with a Leica camera or to add to their present Leica equipment but do not find it convenient to make a substantial cash outlay at one time, E. Leitz, Inc. announces the creation of a Leica finance plan. Under it the purchase of cameras, new lenses, enlargers, projectors, or any other item of Leica equipment including Leitz binoculars may be paid for over a period of time.

"The rates are designed to be low and payments may be spread over a period of a year. Usually dealers will be able to arrange delivery within forty-eight hours. Through this special plan every purchase will be insured against worldwide loss, damage or theft at the extremely low insurance rate of $1\frac{1}{2}$ per cent per annum.

"To those photographers who use their Leica equipment for business and professional purposes the plan offers possibilities for greater income through the added facilities possible with additional equipment. The plan will be available through Leica dealers or E. Leitz, Inc., 730 Fifth Avenue, New York."

Inquiry develops that Bell and Howell announced on June 10 the installation of its "B & H Time Payment Plan—a method of merchandising so simple that deferred payments can now be made in little more time than cash sales require."

The Bell and Howell Company in June as Leica has now in August established relations with the Commercial Credit Company, an organization of vast resources and with 183 offices throughout the United States and Canada to handle its clients.

For years the Eastman dealers have been taking advantage of the credit plan to increase their business. While no brass band has been employed in exploiting the fact nevertheless any person of good credit has been able to secure accommodation on an arrangement that will permit him to make up to ten payments on a purchase. Eastman has not been favorably disposed toward any arrangement that called for more than ten payments.

At the Afga offices it was announced that company was not interested in the matter in question, inasmuch as it is strictly a wholesale house.

Under the arrangement with Commercial Credit the dealer gets the whole amount of his list price in any sale, while the former company takes over the paper of the customer as soon as credit is established, a matter usually accomplished in less than forty-eight hours.

VICTOR ADDS

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TAKE-UP TENSION EQUALIZER

.. insures gentle, positive take-up of film with reels of all capacities (50 to 2000 ft.) . . . puts an end to all TAKE-UP TROUBLES . . . extends the zone of VICTOR'S FAMOUS FILM PROTECTION to the very rim of the take-up reel!

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ANIMATOGRAPH CORPORATION

Davenport, Iowa ... New York City

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MODEL 38 ANIMATOPHONE . . . . a Super Wide-Range 16mm Sound-on-Film Projector with 30 WATTS undistorted OUTPUT for use with two or more speakers . . . . Sets a new standard for natural, full-tonad response . . . . Versatile and complete to the last detail . . . . Ideal for the largest of auditoriums, yet compact, portable and appro-

PLANNING IS THE BASIS OF BETTER VACATION FILMS

Vice President Walter of 8mm. Club Outlines to Other Makers of Movies Some of the Things He Has Learned Regarding Them

By JOHN E. WALTERS

AT THIS time of year a movie addict's fancies turn to thoughts of how he can take and make a better vacation picture. In addition to being difficult to photograph they are harder to plan and edit, and there seems to be no panacea for producing a finished film which will not fail your expectations except your own efforts and ingenuity.

I believe the most common cause of a poor film is failure to lay out a plan covering the story and continuity prior to execution. We have all taken plenty of film of excellent exposure and composition, but we don't know what to do with it as it doesn't fit anywhere. All you have is another untitled orphan for your library.

Know what you intend to do with each shot taken on your vacation before you take it. You rarely get a chance for retakes hundreds of miles away. Another reason is that in keeping within your fixed plan you subconciously add to and better it, and when you start your editing it will work out in an easy manner which will surprise you.

It is certain that good composition in your shots is far more important here than in other types of scenarios The reason is that a vacation picture is made up largely of scenic shots wherein persons or moving objects which ordinarily hold attention are absent.

Urges Color for Vacation

Interest may be held by the balanced beauty of each successive shot. In order to get such shots you should move around more and get the best view from different angles before finally shooting. Pay more attention to where the line of the horizon bisects the frame. To offset distance endeavor to have some close up object in the picture for contrast and to give the appearance of depth.

The vivid and varied tints and colors of nature almost demand that Kodachrome be used on your vacation. How else can you capture and prove to your future audiences the blue of Crater Lake, the pastels of Bryce or Grand Canyon, a sunset or the colored leaves of trees in their spring or fall plumage?

If you have not been shooting color film keep in mind that you are not after contrasting lights and shadows, but for the true beauty and color of the scene at which you are looking.

Shots which are very good in panchromatic will be flat and uninteresting in Kodachrome and vice versa.

Advice against tilting suspended in instance of Mirror Lake of Yosemite.

The beauty of most of your scenics is in the contrasting of nature's own colors.

An exposure meter is an invaluable aid in taking a vacation film. You may be infallible in judging correct exposure in your home town or vicinity, but you are usually vacationing in somebody else's territory, where the quantity and quality of light is unknown to you.

Use a Tripod

The elevation, clearness of the air, whether you are in the north or down south, seashore or mountains all create and present different lighting problems. Changes in lighting conditions caused by traveling from day to day makes your exposures even more difficult. In addition use of Kodachrome makes perfect exposure a necessity.

Do not detract from your film by wobbly shots which result from not using a tripod. When tripods are as cheap or expensive or as heavy or light as you may wish to purchase there is no excuse for pictures that jitter and move around so much you get eyestrain and nervous from looking at them.

If your camera is set up on a tripod it is easier to study the balance and composition of your proposed shot, to check camera level and proportions of the various objects making up the picture, and when it is arranged to your final satisfaction it will remain stationary until exposure is completed.

In a vacation picture it is necessary to take longer shots in order to give your audience time to look at and find the beauty in your picture and then enough time to appreciate it before their attention is diverted to another scene.

Regardless of type of picture, Kodachrome shots should always be slightly longer than when taken in panchromatic. No shot should be less than 11 seconds and usually 15 seconds in length of exposure. In case the scene contains waterfalls, rapids or other moving shots a longer shot will probably be required. The longer length of your shots is, without any other reason, enough to necessitate the use of a tripod.

Exception on Tilting

A vacation picture creates a positive urge to panoram the entire horizon It will be hard to resist, but the less panning or tilting shots you have the better your picture will be. Taking the equivalent footage in steady shots will produce more interesting and artistic results.

I believe there are a few exceptions to this rule, one being a tilting shot to get a reflected image in water of a distant view. For example, Mirror Lake at Yosemite. But in these shots

allow a steady beginning and ending of at least 8 seconds.

Shots from a moving automobile should never be taken of a scenic view. A short shot including a portion of your car in motion will add continuity to a title telling of travel to another place. The imagination of your audience, stimulated by this shot, will take a jump of hundreds of miles, and it will not appear out of the ordinary to them.

And now for the story part—to be at least roughly worked out before you start on your trip It is true that most of us who take pictures as a hobby take a vacation film as a means of preserving a record of a good time which we have had. To you, the person taking the vacation and the film, the resulting pictures when shown are only the highlights of a certain period of time.

When projected your mind connects all the scenes together by innumerable incidents and events, which, while probably too unimportant to shoot, constitute the build-up to the scene on the screen.

Build Anticipation

As far as you are concerned your mind does the mental titling and creates continuity in the film. Not so your audience. It didn't go with you on the trip. Between scenes minds are questioning what and why. Your job is so to plan your picture that all will get from it some of your feelings and knowledge.

When your vacation is a hunting, fishing or camping trip it is rather simple The hunter cleaning his guns and poring over maps or the fisherman checking up on his reels and flies will build up anticipation in the minds of your audience which will carry on through the entire film.

No footage can be counted as wasted if you can give to your audience part of the anticipation and pleasure that you had. The later events which follow will be understood and accepted because they naturally follow from a deliberate build-up of expectation for them.

Novel Titling Idea

Most vacation films are scenic in character and have in addition some other motif, a successive or continued occurrence which acts as the backbone of your picture and around which the scenic shots are woven. This is best explained by an illustration.

For example, a hiking trip briefly outlined during the film can be the reason for all the beautiful shots taken at any National Park. This is the continuity of your film and the means of exciting interest in and carrying it along to a successful ending.

In my 1936 vacation film I used a rather unusual titling idea with (so I am told), very good results. Our trip was to British Columbia and return. It was taken for no purpose except to see the country

Marvelous blue of Crater Lake cannot be translated in black and white film.

Brevity in Titling

About ninety different title shots were used, as follows. A rather long descriptive sentence was split up into a number of short titles. For instance, at Crater Lake a large number of beautiful views were explained quite fully and in few words as:

Title, "From Crater Lake Lodge ——," followed by shots of the lodge and surroundings.

Title, "We Drive Around the Rim——," followed by the different scenic views taken from the rim of the crater.

Title, "and see Wizard Island——," then some shots of the island.

Title, "and the Phantom Ship——," followed by long distance and close-up shots of the ship.

Each part of the sentence was concluded by a dash to show that the end of the sentence had not been reached. In fact, it is a written explanation, instead of an oral one. As simple as the idea was, it effectively titled 400 feet of 8mm. film which was more difficult because of its length.

There is no general plan which universally will cover every vacation picture. Each plan or story depends on what particular type of vacation you intend to take. But one thing is sure, and that is there is at least one plan of taking which will answer your need.

The first plan may not be so good, but subsequent ones are bound to be better. It is important. Give it a lot of thought. And believe it or not, any plan will do more for your picture than none at all.

R. P. S. Holds Exhibit

An Exhibition of Cinematography, comprising films, stills and apparatus, will be held at the galleries of the Royal Photographic Society of Great Britain at 35 Russell Square, London, W.C.1, from November 13 to November 27, 1937

The keynote of the exhibition will be "The Film as a Social Force." During its course lectures and demonstrations of interest to both professionals and amateurs will be given.

A competition embracing all types of films has been arranged. A selection from the films receiving awards will be shown during the exhibition. Inquiries should be addressed to the Joint Secretaries of the Cinematograph Section at the foregoing address.

Knowledge Gained

. . I want to tell you how much I have enjoyed reading your magazine and also of the knowledge I have gained through your Cinematographic Annual Volume I.

HENRY LE CLAIR, JR.
Denver, Colo.

Sports Afield Contest

Sports Afield, Minneapolis, is conducting a photographic contest which started May 15 and closes November 15 next One of the four divisions is devoted to motion pictures, which must be exposed on 8mm. or 16mm. Prizes will be awarded in equipment valued at $286.

The grand prize for all classifications is a choice of seven pieces of equipment valued from $125 to $150. The subject must be of wild life or the outdoors. Entry blanks may be obtained from the contest editor of the magazine. There is no charge.

KINNEY MOORE IS MAKING THIRD DIMENSIONAL 16 mm

Contest Prize Winner Gets Rare Screen Results with Kodachrome Through Dual Cameras and Projectors

STEREOSCOPIC motion pictures —movies in which a real illusion of the missing "third dimension" of depth is given—have received the attention of many researchers, professional and amateur. Some of their schemes have worked; others have not. But the goal of producing moving pictures which will give a scene the same roundness and depth the eye perceives continues to hold endless fascination.

One of the more recent and more successful researches into this field has been conducted by J. Kinney Moore, S.A.C. member and maker of "Nite Life," which won a special award for special effects camerawork in this magazine's 1936 Amateur Movie Contest.

Moore's experiments, made on 16mm. Kodachrome film, successfully capture the third dimension and combine it with natural color to produce results rarely, if ever, shown on the screen before.

The principle underlying any perception of depth, whether photographic or merely visual, is simple. Our eyes are placed side by side, approximately 2⅞ inches apart. Each eye therefore sees the view from a slightly different angle; in effect, the right eye sees slightly "around" the right side of an object, while the left eye similarly partly around the opposite side. In our brain, the two images are combined into one, and this two-eyed vision gives us our perception of depth and roundness. If one eye is put out—even merely closed—things appear as flat as a photograph, and one finds it almost impossible to judge depth or distance accurately.

The camera is necessarily a one-eyed instrument. It cannot, therefore, give anything but a flat one-eyed picture.

Every system of stereoscopic photography or cinematography depends on making in some fashion two separate pictures of a scene, each of which represents what one eye would see, and then showing each eye its proper picture while preventing it from seeing the other eye's view.

Uses Two C-K Specials

Moore gets his two films by coupling two Cine-Kodak Specials together. His two cameras are mounted on a special base, which he built himself. This base is hinged along its center line, not only to allow the left-hand camera to be swung clear that the right-hand one may be loaded conveniently, but to permit the cameras to be "toed in" so that both are centered on the same object—usually the most distant important object in the scene.

Each camera is driven by its own clockwork mechanism, but the two are kept in step with each other by means of a mechanical coupling. The one-picture-per-turn "trick crank" of the camera is removed. In its place is put a sprocket.

The sprockets, in turn, are both connected through a chain belt to a common shaft. Thus it is impossible for one camera to run without the other. In practice, Moore often uses but one camera's motor to drive both.

Projection is by two Ampro projectors connected through a similar chain and shaft coupling. In this case, the knobs used to turn the projector's mechanism in threading have been removed and the sprockets substituted, while the knobs have been replaced at the ends of the coupling shaft. In use, both projector motors are employed for driving.

Each projector is fitted with a standard Eastman Pola screen light polarizing filter. The two polarizers are "crossed" or placed with their polarizing planes at 90 degrees to each other.

Uses Polarized Light

The house is given spectacles the lenses of which are also crossed pola screens. Thus each eye can see only the image projected by the projector whose polarizer is parallel to the polarizing lens in front of that eye, and cannot see the other image projected through the crossed polarizer.

When Moore hands you your spectacles and starts to project his stereoscopic film you get an amazing impression of reality. The picture is, of course, in full natural color: and added to this is a very lifelike depth and roundness.

Scenes photographed among the rocks and cliffs of Yosemite, for instance, give tremendously more of a feeling of depth and magnitude than is possible with any ordinary one-eyed picture. Shots of people are both more real and more interesting.

A notable difference between ordinary cinematography and third-dimensional cinematography is the effect given by panning and tilting shots. As in well known, in ordinary motion pictures, panning and tilting

J. Kinney Moore, S. A. C., with the twin cameras that make his stereoscopic 16mm.

Only a small slit in the spectacles is needed to give a comfortable view of screen.

must be done very carefully. In many amateur films panning and tilting are definitely objectionable because even a relatively slow movement is exaggerated to the one-eyed perception of the camera.

Much to Learn

In Moore's stereofilms, pans and tilts have precisely the same natural effect gained when in real life one turns his head to survey a landscape. The writer noticed this in viewing the films, and noticed also that, if he closed one eye, a pan which to two-eyed vision seemed normal, that pan, viewed monocularly as would be the case with an ordinary picture, became too fast. Opening the closed eye and restoring the stereoscopic effect made the pan seem natural again.

Asked why he ventured this experiment, Moore replied: "I had always wanted to try it; so when I had completed 'Nite Life' and 'Prize Winner' in rather quick succession I decided to try out my stereo-movie ideas.

"I built the devices, aside from the cameras, projectors, and one piece of machine work too large for my shop tools, myself, and had a lot of pleasure doing it. Since then I've had a lot of pleasure learning how to shoot effective stereoscopic movies. There's quite a bit to learn about stereoscopic composition, and about such technical details as having the cameras correctly aligned.

"Both, you know, must be centered on the same object—preferably the most distant in the scene. Otherwise you will get an unpleasant double image of things nearer or farther, due to parallax. I'm planning to add a binocular eyepiece to the magnifying focusing tubes of my Specials, so that I can focus one stereoscopic image rather than two flat ones. This should help a lot in lining the cameras up right.

Cutting a Problem

"Cutting the two films synchronously is quite a problem to one accustomed only to cutting a single film. Both pictures must be absolutely in step—to the frame. One frame's difference would not seem to be noticeable, but it is. You don't see it consciously, but you feel something is wrong with the picture.

"The thought of using pola screen material for the spectacle lenses seems unduly expensive at first sight, but I have found how to make these spectacles for a few cents apiece.

"Tests showed me that in looking at a motion picture screen the eye only needs a small slit to see through, so my next batch of spectacles will be opaque except for a little slit about half an inch long by a quarter of an inch high, where the polarizing material will be. And I'm confident the people that wear them will not notice any difference between watching a picture through normal spectacles and through these." W. S.

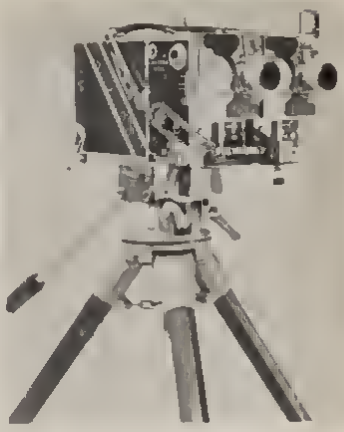
Consider Applications for R. P. S. Membership

Under the Articles of Association of the Royal Photographic Society of Great Britain, Associateships are awarded to those members who satisfy the Council of their ability in one or other of the branches of photography, or the arts and sciences relating thereto; Fellowships are granted to those Associates who possess distinguished ability and originality.

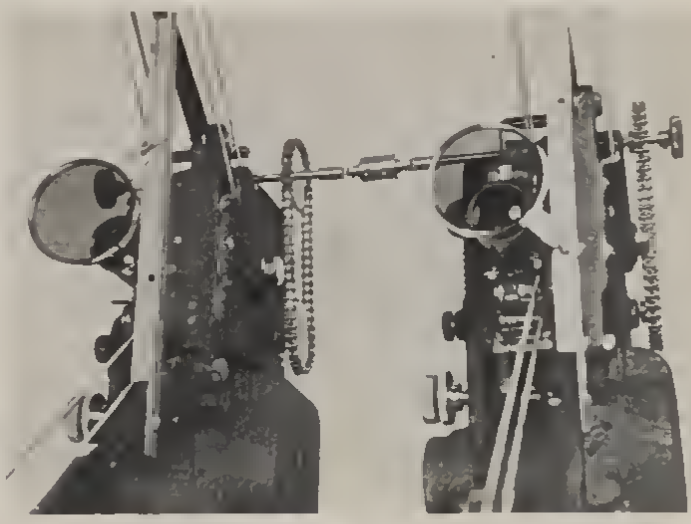
Cinematography in its widest aspects is, naturally, one of the most important of the arts and sciences pertaining to photography, and applications for the Associateship and Fellowship under this heading are considered by a committee of the council the majority of whose members are actually engaged in the motion picture industry.

While realizing the difficulty of assigning individual credit to those engaged professionally in motion picture production, the committee of the Cinematograph section of the society has carefully considered how technical responsibility in this field may be recognized by the award of the Associateship and Fellowship; their recommendations to the Council have been approved.

Accordingly, consideration can now be given to applications for the Associateship and Fellowship, based upon contributions made to outstanding productions by the responsible technicians in the various departments—camera, sound, editing, art, direction, laboratory, projection, etc.



Two C-K Specials work together on Moore's special base-plate for stereo movies



Close-up of the two projectors used for third-dimension movies. Note how Moore couples the two units to run synchronously, and use of "crossed" pola-screens

TITLES CONTINUE IMPORTANT PART OF SILENT FILM

Amateur's Best Approach to Subject Is to Refuse to Class It as a Problem—Plenty Devices for Making Good Ones

THE best approach to the problem of titlemaking is to begin by refusing to consider it as a problem. Titles are an inescapable part of every complete silent picture, and there are so many ways of making good titles that the method used can be suited to anyone's inclinations and cinematic ability. It is hardly possible to discuss every possible way of making titles in the space here available, but let's look at a few representative methods.

The first, and most obvious, is to enlist the aid of one of the titlemaking devices offered by the camera manufacturers and others. While these differ in detail, most of them basically are similar and consist of a baseboard at one end of which is a mount for the camera and at the other end an easel to hold the title card. Immediately in front of the camera's lens is a single supplementary lens which brings the camera lens to a focus precisely on the surface of the title card.

This type of titler has many fundamental advantages. In the first place, the perplexing problem of parallax—the fact that since the finder and lens are not in the same place they cannot include the same field when focused on objects close to the camera—is eliminated.

Moreover, the problem of focus is itself eliminated, for if the camera lens is focused at infinity the supplementary lens has no effect upon the diaphragm markings of the camera lens, so exposure can be dealt with in the usual manner.

Making a Simple Titler

Most of these commercial title makers have, however, one rather serious disadvantage — the size of their field of view, and hence the size of the title cards they take, is inconveniently small. In the Cine-Kodak titler, for instance, this field measures but 2½ by 2¾ inches, which is really rather small for a wordy title, for art titles and the like.

An excellent way to get around this difficulty, while yet retaining the basic advantages of this type of titlemaker, is to make your own titler, providing for a larger title card.

This can be done very easily. The foundation of the affair is simply a good, sturdy board of the desired size; for rigidity, I would recommend three-quarter-inch or even 1-inch stock. At one end drill a hole for a quarter-inch machine screw which will engage the tripod bushing of the camera. The camera itself should rest tightly against small blocks which serve to hold it rigidly in line.

Directly in front of the camera lens is a wooden upright which carries the supplementary lens. This supplementary lens can be a simple spectacle lens of the desired power; you can get one at the ten-cent store or, if you want one of better quality, go to your favorite optician and get a Bausch & Lomb Celex spectacle lens. The power, or dioptre rating of the spectacle lens, will depend on the size you want your title cards.

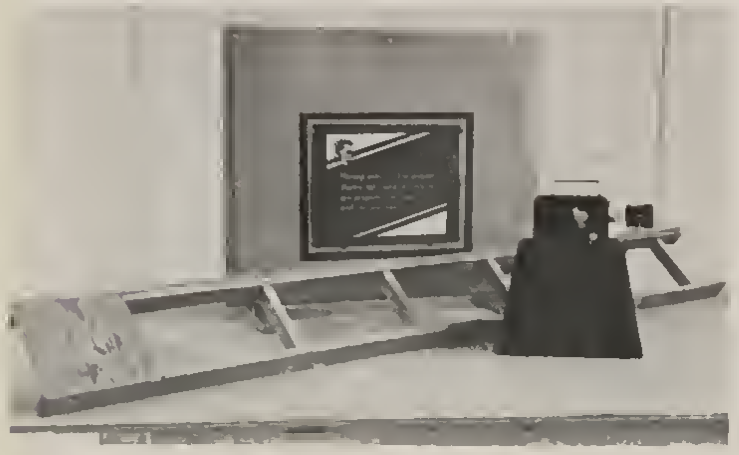
Using either a standard 25mm. lens of any speed on a 16mm. camera, or its equivalent 12.5mm. lens on an 8mm camera, a 1 dioptre spectacle lens used this way will give you a field 12 by 16 inches at a distance of 39 inches from the camera; a 1.5 dioptre, 9 by 12 inches at a distance of 28.95 inches; a 2 dioptre, 6 by 8 inches at 19½ inches; a 3 dioptre, 4 by 5¼ inches at a distance of 13 inches; a 3.5 dioptre will cover 3⅜ by 4½ inches at 11¼ inches, and a 4 dioptre will cover 3 by 4 inches at 10 inches.

Bigger and Better

On the other hand, you may long for something more ambitious than is possible with this relatively simple construction. In that case, your own mechanical and photographic ability should be your guide.

R. C. Denny, S.A.C., of Fresno, Cal., recently sent me a picture of the title device he built for the "Sierra Special" 16mm camera he constructed. It consists of a pair of demountable tubular arms extending forward from the camera like the mattebox supports on a professional outfit.

At the outer end of these arms he places a suitable holder for the title card, or, as in the picture, a roller



Dr. Henry Imek's home-built titler takes up little space when not in use.

mechanism to carry "roll up" or scroll titles.

Denny's device is built as a virtually integral part of his specially built camera; but the principle can be adapted to almost any sub-standard camera by simply making a small brass block to go between the tripod head and the camera, and attaching the extension arms to this block.

Another popular type of title board is exemplified by the one used by Dr. Henry Linek of the Los Angeles 8mm. Club. His device, which was about five feet long, consisted of a baseboard on the sides of which two raised strips formed a sort of track. In this track a boxlike support carried the camera, sliding toward or away from the title easel, which was a veneer panel about 2½ feet square.

Various points on this track can be calibrated, so that once one knows precisely what field the camera covers at a given distance all that is necessary is to slide the carriage to that particular calibration—and shoot.

Parallax Important

Right here the question of parallax begins to grow important. In any titler that you make yourself you will have to face the fact that at these short distances the camera lens covers a different field from that seen in the finder, which may be mounted to one side or the other of the lens, above or below it, and sometimes both above and to one side, as in the Filmo 8, for instance, and the Victor sixteens. The latter, incidentally, are almost the only sub-standard cameras the finders of which provide a means for correcting accurately for parallax at several distances.

Speaking generally, you can allow for this error by ignoring the finder and running a straight line from the center of the lens to the center of your title easel. You can also, if you wish, measure the exact horizontal and vertical separation of finder and camera lens and line up the title through the finder, thereafter moving the card this same distance before shooting.

Vertical Type Useful

Of course, this problem is eliminated if you have a camera which permits focusing through the actual photographing aperture. While not many 16mm. cameras other than the C-K Special allow this, quite a few of the eights have gates which can be swung out of the way while you focus on a bit of ground leader film.

In this connection remember that the projector aperture is in almost all cases slightly smaller than the camera aperture, and make allowance for it unless you want to see your title unexpectedly trimmed down Also, many projectors—especially 8mm. ones—have a tendency to carry the film to one side or the other. So be sure you allow plenty of space at the sides of your lettering.

Another very useful type of titler is the vertical type, in which the title carrying easel forms a horizontal base, while the camera is suspended above it, pointing straight down. This is really a considerable advantage when you are using certain types of cut-out, movable letters.

Some of these titlers even provide a sliding carriage for the camera so that title cards of various sizes may be used, "zoom" titles made, etc A miniature camera enlarger could very easily be adapted to serve as a foundation for one of these vertical titlers.

Of course, if you want to follow the professional's lead, you can make a very adaptable titler by using an old lathe bed of any convenient size as the foundation of your titler. This construction, while larger and probably more expensive than others, will be absolutely rigid, and the distance between camera and title can be adjusted very precisely by means of the worm-feed mechanism of the lathe. Incidentally, this adjustment may be made either by having the camera the movable unit, or by having the title carrier movable.

Lettering the Titles

Making the title cards—and especially the matter of lettering them—is a serious problem to some. Those who are artists or draughtsmen, of course, consider it relatively easy. But not everyone is able to do a good job of hand lettering. For them there are several excellent expedients.

First of all there is the typewriter. This is good enough for common, run-of-the-mill titles, but it does not as a rule give a really finished looking title.

The many types of wooden, metal, celluloid and even paper cut-out letters are also helpful, while the recently introduced rubber stamp method can prove extremely useful. Surprisingly professional looking titles can be produced with some of these commercially available equipments.

There is also an excellent little stencil lettering guide on the market. I have seen very well lettered titles produced in this way by individuals I know are not skilled draughtsmen. The device, incidentally, is extensively used by professional draughtsmen.

Many of the more ambitious amateurs have bought themselves small printing presses, so that they can produce their own printed titles. Even if one does not care to add printing to his accomplishments he can have title cards printed quite reasonably in many printshops

Choosing Title Cards

The possible choices as to title cards and backgrounds are almost literally limitless. For the simplest and cheapest of black-and-white titles one can simply use a plain white card with black lettering: photographed on positive film with full exposure and developed in a contrasty "process" developer, this will give white letters on a black ground.

If you are using reversal film your title card will have to be black with white (or silver) lettering. If you want to get away from the monotony of unrelieved black backgrounds, yet

Dr Henry A. Linek, Past President of the Los Angeles 8mm Club, making titles.

...who said 16 mm. movies are expensive?

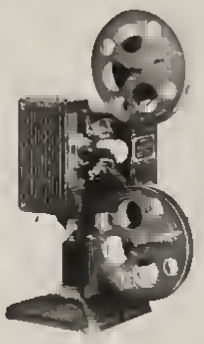
$48.50 buys CINÉ-KODAK • MODEL E

ALTHOUGH the lowest priced 16 mm. Ciné-Kodak ever offered, Ciné-Kodak E compares favorably with many movie cameras priced far higher. It's fixed focus, with a Kodak Anastigmat *f* 3.5 lens loads with your choice of three Ciné-Kodak black-and-white films, and regular daylight Kodachrome or Type A Kodachrome for Photoflood. You can operate this economical, versatile camera at any of three speeds Normal, Intermediate, Slow Motion—16, 32, or 64 frames per second.

Check its advantages

Ciné-Kodak E has a long-running spring motor secured winding handle built-in exposure guide automatic footage indicator exclusive dual-purpose enclosed direct view finder that shows both image and footage simplified gate and ample finger room for easy loading sturdy die-cast aluminum case with black crackle finish.

In short, the "E" has just about everything you'd want in a 16 mm camera—and at a surprisingly low cost. Ask to see it at your nearby Ciné-Kodak dealer's.



$59.25 buys KODASCOPE • EE

THE "EE" despite its low cost is the real thing. This Kodascope bows to no 16 mm. projector *in illumination supplied to the screen*. Yet, for those who do not need maximum brilliance, the "EE" offers you your choice of any lens-lamp combination from among its five lenses and three lamps—"tailor-made projection" fitting it to supply just exactly the correct amount of light for the size screen you use.

Smartly styled, cool, quiet, designed to project from carrying case top, the "EE" is obviously the outstanding 16 mm. projector. From $59.25, complete with lens and lamp.

EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

without going into the matter of "art" backgrounds, you can use almost any kind of mottled or patterned paper so long as it remains in dark tones that allow the white letters to stand out clearly.

For Kodachrome pictures there is the added attraction of using colored backgrounds. Plain or patterned colored paper such as used in Christmas cards, with the lettering in metallic ink—silver, gold, bronze, green, etc.—give a tremendously wide range of possibilities for making titles that harmonize with the color mood of your picture.

May Use Linoleum

Finally, there is the use of double exposure for combining any desired background with the lettering. Of course it may be possible to letter over a design or picture, but wherever possible, double exposure is really preferable as it gives you a wider choice, allows you to use backgrounds of a size different from that usually used for the lettered cards, and to use the same background over and over again.

The procedure in this case is the same for either black-and-white or Kodachrome. Begin by marking a starting point on your film. Then expose as much footage as necessary on any desired background. You can use magazine illustrations, photographs, or even picture postcards; you may even use something with a simple decorative pattern, like wallpaper. R. C. Denny, S.A.C., reports even using samples of linoleum!

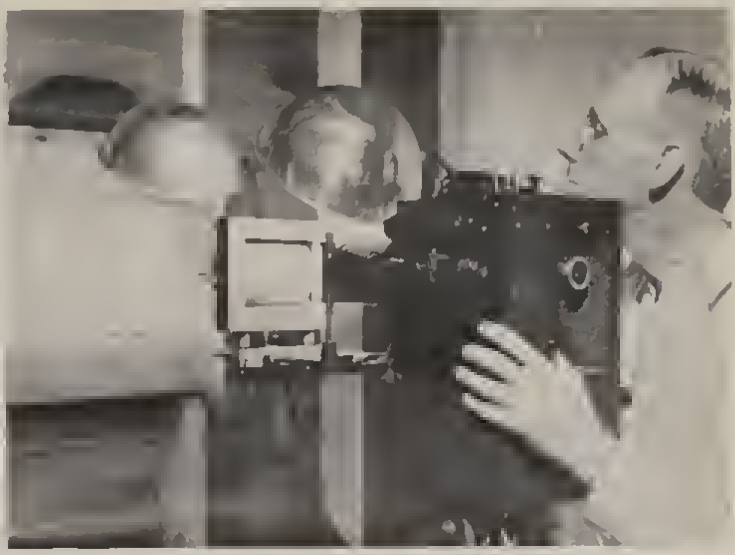
When the first exposure has been made the film is rewound—either in the camera, if it is fitted to do so, in a darkroom or a changing bag—to the starting point. Then the second exposure—the white or silver letters on the flat black card—is made.

Double Exposure on Negative

These two exposures have to be balanced rather carefully. In general, the background should receive less exposure than the letters. In some cases it may be a good idea to use a diffuser when photographing the background, so that it may appear soft and not too distracting in the completed title.

This type of double exposure work is particularly easy with double-run 8mm. film, as the first exposure can be made at the beginning of the roll, and then, when the rest of the roll has been exposed, the second exposure made, after which the roll either may be rewound or run twice through the camera—with the lenscap carefully in place, of course.

These composite title effects are easiest of all if you use negative-positive and do your own processing. All that is necessary is to run two previously made (and developed) films—one of the background, the other of the title—through the printer together. In this case, the title must be a black card with white letters, of course, so that the background can print through.



R. C. Denny, S.A.C. member of Fresno, Calif., making titles with the "Sierra Special" 16mm. camera he built, and an ingenious titler which is carried on an extension of the matte-box supporting arms.

Naturally, running three films—two negatives and the raw positive—through the printer together, only one negative—the one nearest the positive and in direct contact with it—will print absolutely sharp. It is a matter of personal taste as to whether the title or the background should be the soft part of such a title.

A further very practical method of making decorative titles is used by Dr. Linek. He makes a cardboard frame for his title cards, with any desired design on this frame. The center is cut out, and behind the frame he slides the title card proper, bearing the letters. This is a big help in making distinctive titles quickly, for once the frame is properly aligned in the titler it is a simple matter to slide a number of lettered cards in and out.

This framing idea is helpful in more ways than one. Dr. Linek, for instance, advocates placing decorative diagonal strips across two opposite corners of the frame. These diagonal lines, he says, not only make the title more interesting, but serve to conceal any minor inaccuracy in aligning the lettered card with the frame. In at least one of his title frames these strips consisted of simple strips cut from colored paper!

It is important that titles be timed correctly. The audience must have time to read them, yet if too much footage is allowed the title becomes boresome and obvious. The professional rule is to allow one second a word for the first ten words and thereafter one-half second a word.

Title Timing

Amateur films, however, are often made for audiences boasting a higher I. Q. than the heterogeneous public of a professional film. Therefore in many instances sub-standard titles may allow about a half-second a word, with, however, a minimum total screen time of three or four seconds. One second, in case you don't remember it, represents roughly 6 inches of 16mm. film or 3 inches of 8mm.

The wording of titles should always be as brief and clear as possible, but never telegraphic. Moreover, the title should explain its point very clearly. If the audience has to stop to figure out what a title means that title is inadequate.

Titles that indicate a lapse of time—especially in dramatic films—should be proportioned somewhat to the lapse they bridge. For instance, a title reading "The Next Day" is perfectly adequate for so short an interval; but one saying merely "Ten Years Later" would be unduly short to indicate such a long lapse of time.

More words can be used and the title can to good advantage be faded

in and out. It may only take a second or so longer on the screen—but it suggests an interval better fitting the idea.

Finally, there is always the question of when to use plain title cards and when to use decorative ones. This is a matter of taste; but the most approved professional practice in the silent days was to use "art titles" for main and credit titles and for changes between important sequences, where the audience could stand a break in thought, and to use plain titles, or titles with only an inconspicuous design—such as a mottled background, the producer's initials, or the like—within the sequence itself, thus keeping attention concentrated on what the title said, rather than on how the title looks.

In general, with the possible exception of main titles, you may rest assured that if the audience compliments you on the photography of your titles, those titles are bad, while if they ignore them (and you know they are photographically good!) the titles are very good indeed, performing perfectly their duty of explaining the picture without thrusting themselves into the foreground.

AMATEUR CLUB NEWS

Los Angeles 8 MM Club

Proving that Los Angeles Eight Millimeter Club is forging ahead, the regular meeting held in the auditorium of Bell and Howell August 10 was crowded with more than 120 members and guests.

Following the reading of the minutes the editor announced the September issue of the club paper, Thru the Filter, would be ready for distribution at the September meeting.

The introduction of four new members fell upon Vice President John E. Walter. These were W. E. Hadsell, A. J Zeman, Harry J. Doerr and Lois Bingham. This increases the number of women members to seven. We are looking forward to a great deal of activity from the feminine division this year.

The popular News Items of Interest committee, headed by C. G. Cornell, brought the attention of the members to various articles published in the several magazines.

Prepared rules and regulations regarding the trophy given to the club by Mr. and Mrs. W. L. Horton were read by Vice President Walter. The name to be engraved on the emblem is "The Horton Vacation Trophy."

Due to the increase in membership Vincent Hague and R. N. Hockaday were added to the social committee to assist in the regular lines of duty of this ever important committee.

President Loscher announced the Eastman Kodak Company upon presentation of membership cards at its Hill street store was giving a book entitled "Junior Scenarios" to all members in good standing who wish it.

A contest for next meeting was announced in the form of a "one reeler" filming any one of the three subjects: The beach, the city or the mountains. Members were asked to deposit their film with Harry Babb of the Eastman Company on or before September 8 for judging.

Next in line was the usual Technical Committee session answering problems of various members.

Members were reminded in their regular monthly letter to bring their film for analysis, so a period was set aside to project films for analysis.

The principal feature of the evening was most interesting with the demonstration by club members on "How I Make Titles." Among the speakers were Vincent Hague, Dr. Henry A. Linek, C. G. Cornell, Bion Vogel and Earl Janda. Several novel devices and gadgets were displayed.

Dr. Freebairn, former secretary of the Los Angeles Cine Club, was introduced to the membership.

Following a short intermission, several films submitted by members were shown. Leon C. Sprague displayed a Type A Kodachrome picture filmed on candid camera nigbt at the Paramount theater. Ed Pyle created a good many laughs with his film taken on supersensitive of his two children. James B Ridge showed some air shots and P. M. Neirsbach exhibited film taken in Yosemite Valley.

Bion Vogel's picture entitled "Kittens," which was the first to win a prize in the L. A. 8mm Club in 1935, was a feature of the evening.

▼

San Francisco Cinema

At the meeting of the San Francisco Cinema Club Tuesday, August 31, at the club rooms of the California Camera Club, "Composition" was the subject of a talk given by member G. Allen Young, editor of Camera Craft Magazine. Examples of both good and bad composition were displayed and discussed.

From all reports the "vacation" movie contest will have a large number of entries. Remember, all that is necessary to enter this contest is to submit a motion picture taken on your vacation during 1937. It can either be colored or black and white and not over 100 feet of 8mm. or 400 feet of 16mm. This contest closes at our September 28 meeting, so you still have time to get yours together.

E. G. PETHERICK, President

8mm. for Honolulu

FRANCIS C. WILLIAMS, 4740 Farmer's Road, Honolulu, is organizing in his town a club for 8mm. camera users. He reports good cooperation from the local Eastman Kodak Stores. Mr. Williams may be reached in the evening by phoning 78475.

▼

Philadelphia Cinema Club Bulletin

Roger Conant of the Philadelphia Zoo has invited members in groups to avail themselves of the opportunity to get close-ups and detailed movies of the animals under expert guidance. Get in touch with A. L. O. Rasch, club secretary, who will arrange the details.

Three new members were added to the roll at the last meeting—J. L. Richards, Hatboro, Penn.; Wilmer P. Coles, Moorestown, N. J.; the Rev. Erneat Vandenborch, Hartsville, Penn.

Be sure to enter a film for the summer contest. The rules are simple, limit 400 feet of 16mm or the equivalent of 8mm. Any length under the limits is acceptable; any subject; color or monochrome; synchronized or silent The gates are wide open.

The new DuPont Superior film about which Dr. Sease spoke to the club carries the same Weston rating as Eastman Supersensitive (24).

George Pittman, our esteemed V. P., started after his movie prize bright and early. Loaded down with two movie cameras, a flock of film and quite a few gadgets, George set out to "do" Yellowstone, Salt Lake and surrounding sections.

There are times when a bit of extra light is required to create a sharp shadow in a close-up. Diffused light from the ordinary photoflood reflector will not give sharp results, but a projector will serve the purpose. Turn up the lamp and focus the lens so that a clean-cut rectangle of light is formed at the spot where it is needed. Run the projector faster than normal to lessen the danger of the shutters becoming synchronized with the camera.

TELL IT TO THE FILM SAY EXAMINING POLICE

And Then the Accused, with the Charges Fresh Upon Him, Is Photographed and Record Made of Words and Demeanor

By JAMES E. DAVIS, Chief of Police of Los Angeles

THE Supreme Court of the State of California recently handed down a verdict that the camera cannot lie; more specifically, that the 16mm. sound camera cannot lie.

This judicial confirmation of the old adage was occasioned by the fact that the Los Angeles Police Department has installed a motion picture department to make 16mm. sound-on-film movies of the statements and confessions of suspected criminals.

This celluloid evidence is later projected in court to allow judge and jury to form their own opinions not merely of the reported words of the prisoner, but also of his actions, manner and condition.

It is one thing to hear a detective read a stenographic transcript of the examination—weeks before—of a prisoner. It is quite another thing to see and hear the suspect actually make that statement from the screen and to observe his manner.

Motion pictures are no new thing in civil courts, for 16mm. movies long have been acknowledged as legal evidence in damage suits and the like. In at least one spectacular instance, a professional newsreel lent its facilities to the prosecution of a criminal case.

But the Los Angeles Police Department is the first to organize its own studio for making criminological 16mm. talkies. It is particularly fitting that this new use of the movie should be pioneered by the police of the movies' home town.

Incorruptible Witness

In adding the motion picture to the crime-detecting laboratory of the Los Angeles Police Department we are taking another step in support of our contention that the most efficient police force is the one which most fully utilizes the modern methods and equipment science has made available.

The business of a modern police force is not so much to secure convictions for its own sake as it is to produce and present evidence which can leave no possible doubt of the guilt—or innocence—of the suspect.

In this, the motion picture can play an important part.

The examination of a suspect by police officers, soon after his arrest, is always important evidence when the case comes to trial. A stenographic report of this examination is usually made; some details, however, such as manner and expressions, cannot be accurately reported in this fashion.

The talking picture camera, on the other hand, misses nothing. It can present every detail of the actual examination so that the court may study it carefully at any time. And it eliminates the element of human fallacy.

Pioneering in a new field like this no one can say what can and what can not be done. One can, however, foresee some applications of motion pictures which will inevitably prove valuable.

Disproving "Third Degree"

Under ordinary procedure the court must choose between the statements of the arresting officer and medical examiner who say the suspect appeared intoxicated, and the evidence given by his friends who say he was not intoxicated. In court, the suspect is undoubtedly sober, and it is difficult to decide what might have been his condition weeks before.

A sound film made immediately following the accident gives the court a chance to see for itself whether the suspect appeared drunk or sober.

While coercive methods and brutality have no place in modern police methods, the defense, in an attempt to repudiate a confession, sometimes places the policeman under suspicion of having used them to obtain a confession. A talking picture record of this type is a powerful and incontrovertible means of disproving this accusation.

A further use for this equipment is in making instructional films for teaching members of the force the most efficient routines and methods. Films can be made showing the part of different police units in case of major emergencies; showing the most effective methods of observing and collecting evidence; showing how an officer should approach a car whose occupants, suspected of a crime, may be heavily armed and desperate. The possibilities of these motion pictures in making our police force more efficient guardians of the lives and property of our citizens appear endless.

Police Camerawork

But this is rather digressing from our discussion of what is actually being done with our 16mm. movie equipment.

This work is done by the photographic experts of the Police Crime Laboratory, which is a part of the Record and Identification Division. The staff of this laboratory naturally includes experts in many phases of photographic work. In addition, we are fortunate in enjoying the cooperation of the major studios and of the American Society of Cinematographers.

Our 16mm. sound movies are made with a Gumbiner Synchro-Sound camera. Since this is fitted with f:1.5 lenses and we use Super-Pellex film, which has a Weston speed rating of 40 to incandescent light, we have been able to make excellent movies (at talking-picture speed) under what is scarcely more than ordinarily bright room lighting.

Our pictures don't have to be artistically perfect, but they must be technically good so that faces and voices can be identified positively. Yet they must be made under conditions which are far from ideal for either camera or sound. It is a tribute alike to the equipment and to the efficiency of the Crime Laboratory's personnel that we are able to do this.

Long-Shots Best Evidence

Certainly, we have given the equipment and its operators difficult tests in actual practice. In three of our most recent films, for instance, the suspects were foreigners who spoke with very strong foreign accents, and were perforce photographed under extremely unfavorable flat lighting.

Yet the pictures were both technically and legally successful. There existed no doubt as to identities. Our records show that two of these films were introduced as evidence in court, and in both cases aided in securing convictions; the third case never came to trial as the suspect was found insane.

(Continued on Page 400)

AMERICAN CINEMATOGRAPHER 1937 AMATEUR COMPETITION FOR 8mm and 16mm SUBJECTS

One Thousand Dollars In Prizes

$500 Cash $500 Equipment

There will be a Grand Prize of $500. There will be six other cash prizes, of $50 each, for, respectively, Photography, Color, Scenario, Home Movie, Educational, Scenic

NO ENTRANCE FEE
ORIGINAL FILMS ONLY—NO DUPES
NO REDUCTION FROM 35MM

The Contest is Worldwide

•

It Ends Midnight November 30 Next

•

Open Only to 8mm or 16mm amateurs or amateur clubs

•

If you intend to enter please send coupon printed on this page for official entry blank

AMERICAN CINEMATOGRAPHER
1782 No. Orange Drive
Hollywood, California

Please send me one of your official entry blanks. I intend to enter a (16mm 8mm) picture in your 1937 contest. I understand my entry must be in your office not later than November 30, 1937.

Name . . . . . .

Street. . . . . .

Address . . . . . .

Among Equipment Prizes Will Be—

VICTOR ANIMATOGRAPH CORPORATION

Model 11 Victor Master Silent Projector (complete with carrying case). Optional credit will be issued in sum of $147 against purchase of Models 4 or 5 Victor Camera, any model Victor Sound-on-Film Animatophone, Model 22 Silent Victor Master Projector.

BELL AND HOWELL

Will award $100 in merchandise to be selected by contestant adjudged maker of film best in photographic technique and made entirely with Bell and Howell cameras, either 8mm. or 16mm.

WESTON ELECTRICAL INSTRUMENT CORPORATION

Contributes without reservation as to the character of the film submitted one Weston Cine Exposure Meter, Model 819.

AGFA ANSCO CORPORATION

Six 100-foot rolls Agfa 16 mm. Hypan Reversible Film and six 100-foot rolls Agfa 16mm. Fine-Grain Plenachrome Reversible Film. The rolls of Hypan are to go to the person winning the highest award and using Agfa Film for it. The Plenachrome rolls are to go to the next highest prize winner who takes his prize-winning picture on Agfa Film.

MITCHELL CAMERA CORPORATION

Astro f:1.8 20mm. lens, to be awarded at the discretion of the judges.

HARRISON AND HARRISON

To the maker of the best 8mm. or 16mm. color picture a Harrison Color Meter in leather case, complete with six 1¼-inch meter-matched filters in leather filter-fold.

UNCLE SAM BUSY LENSER

By REED N. HAYTHORNE, A. S. C.

IT is quite astounding to look into the activities in Washington and find that our Government is so well served in all the crafts and sciences. It is remarkable to see how many laboratories are equipped for research into problems that to the lay mind seem so trivial.

If one should pause in a small room in the South Building of the Department of Agriculture and look into a myriad of jars all containing flies that look identical and then have one of the laboratory men who is considered a wizard explain how many various species of flies there are, what damage they do, and what the Government is doing and has done in the past to exterminate the species that work the most havoc, comparing the exhaustive amount of research work from the past to the present day scientific methods, it is indeed amazing.

In another building you may enter a laboratory where you can be informed as to just how much tensile strength there is in the clothes you wear. These laboratories are endless, located in mammoth buildings all over Washington.

Farmer See for Himself

Motion pictures are beginning to play a big part in these research programs, acting not only as documentary films, but as fine educational features for farmers, C.C.C. boys, soldiers, sailors, flyers, military strategists, and men in all walks of life and in all trades and professions. These films also serve as constructive propaganda for the entire country.

A farmer can inspect his property and take inventory, look for signs of deterioration, then he can attend a meeting called by his county agent, and that county agent can show him a film that explains by narration just what he can do to stop erosion on his land or just what crops he should plant and what machinery he should use to obtain the best results.

The narration is compiled by these same wizards who work in the various laboratories which specialize on all problems, and the narration is given by some of the best narrators in the country.

An individual or group of individuals can obtain these films no matter who he is or what the group may be. If you would like to see the National Parks the only requirement is that you ask for the pictures of the various ones you are desirous of seeing.

If you are interested to know how metals are smelted and molded you can obtain pictures that will give the entire process from beginning to end. In fact almost anything you care to know or see can be found in motion pictures made and distributed by the United States Government.

Study Film Preservation

If the Government does not have the picture you request, it will make one, using the most modern and up-to-date equipment that can be had and technicians who excel in their specific type of work. Our second Hollywood is located in the great capital of this country.

The storage, preservation and perpetuation of film has been studied by technicians in Washington until it is estimated that in specially constructed film vaults and under specific conditions film of acetate base can be preserved for several centuries while the life expectancy of nitro cellulose film has been materially increased to perhaps fifty years. It can then be copied and perpetuated indefinitely, losing very little detail.

If you care to know just what films have been completed and how many of them there actually are, you may consult the National Archives and obtain a list of almost all the films that have been produced by the United States Government and the number in process of production.

It is my belief that at this time the theatrical producers and the Government producers should cooperate to bring their combined experience and knowledge together, thus inevitably resulting in a more versatile understanding of the motion picture industry and its problems.

Demand for Film

The pictures which have been produced vary in subject matter and range from entertainment features, showing children at play to scientific productions revealing how fungi snare and destroy nematodes — in short, from educational pictures for use in a kindergarten to documentary films to be used and reviewed by scientists and strategists.

One of the Government agencies will ship approximately 347 reels a week to possibly all parts of the United States, and on some occasions shipments are made to foreign countries.

In many instances another agency is very often several months behind booking schedule and has as many as 100 copies of one subject for circulation.

Many foreign Governments have purchased copies of films made by this agency, for use in their educational institutions. Recently a request was received from Brazil for permission to purchase 12 films. It is estimated that audiences totaling 8,809,496 have seen this one agency's films in the last fiscal year.

If two agencies accomplish this much, and there are many such agencies doing the same thing, it can readily be understood that motion pictures are fast becoming popular with the Government and that our Government is certainly doing its part in visual education, documentary film work, and research, through the use of good motion picture production.

KODACHROME
DUPLICATES 16mm 35mm
STITH-NOBLE CORP.
6362 Hollywood Blvd., Hollywood, Calif.

ENHANCE
YOUR PERFORMANCE
with KINO-HYPAR
The Kino-Hypar f/2.7-f/3 series are Goerz Precision Lenses which give you that clear-cut crisp brilliancy so essential in good movie making. They are made in focal lengths from 15mm. to 100mm. and can be fitted in suitable focusing mounts to amateur and professional movie cameras.
Cinematic accessories including the Goerz Effect Device, the Goerz Variable Field View Finder and the Goerz Reflex Focuser are useful and precise instruments that enhance the pleasures of amateur cinematography.
Literature on Request
C.P.GOERZ
AMERICAN OPTICAL CO.
317 EAST 34TH ST. NEW YORK

GUMBINER BRINGS US 16mm. SOUND CAMERA

Built Into Sound-Proof Blimp and Carries Semi-Pro Equipment

THE introduction of a new 16mm. sound-on-film camera is always of interest. The latest entrant in this field is the Gumbiner Synchro-Sound camera, a semi-professional single-system equipment, recording sound on the same film as the picture. The variable area system is used, the sound track being made by a sturdy galvanometer.

The camera is built into a compact sound-proof blimp. At the front is a standard three-lens turret operable at any time, without the necessity of opening the blimp. The finder is placed within the blimp, as close as possible to the lens, and is sighted through glazed windows in the sound-proof housing.

Four hundred feet of film are carried in professional-type magazines mounted above the camera box. Threading through picture and sound apertures follows conventional practice and offers no complication.

The film-moving drive is based on an interesting principle. Two separate motors are used to propel the film past the picture aperture and the recording aperture. A synchronous motor, damped by an adequate flywheel, drives the film at constant speed past the recording aperture.

A variable speed series motor drives the film through the picture movement. Interposed between the feed magazine and the picture movement is a spring-loaded sprocket rotated by the film's motion. On the shaft of this sprocket is a commutator connected to the commutator of the variable speed motor.

The tension on this spring-loaded sprocket is exerted in the same direction as the film's movement, and is balanced so that at the standard 24-frame-second recording speed the variable motor is driven at constant speed; should the film movement drop below this operating speed the motor is automatically sped up; if it exceeds this speed the motor is automatically slowed.

Control Panel Separate

In use, this drive is said to be practical; after a moment's "hunting" the two drives steady down to a perfect operating balance, while in starting the system automatically establishes and maintains the requisite 25-frame interval between any given action frame and its accompanying sound.

This drive also permits using the recording part of the camera as a synchronized double-system sound recording head with any standard 16mm. camera which is or can be fitted with a one-picture-per-turn shaft upon which a commutator equipped electric motor may be fitted, or to a similarly equipped projector for dubbing sound into previously photographed silent film. Cine-Kodak Specials, Filmos, and other cameras have been so fitted for double-system use in this manner.

The amplifier system for the recorder is mounted directly beneath the camera-head, inside the blimp.

The control panel for the sound forms a separate unit, carried in a leather-covered case which may be set at any convenient position near the camera.

The unit is powered by 50-cycle or 60-cycle alternating current from any outlet. For field use a battery powered 60-cycle vibrating converter is supplied.

Averages Above Reduction

The camera unit is surprisingly light, weighing but 20 pounds empty, and under 50 pounds loaded, with tripod and all accessories ready for use. It can be conveniently carried by one man.

The writer has seen a number of films made with this equipment under varied conditions ranging from the ideal surroundings of a major-studio sound stage to the unfavorable conditions of an ordinary office, and using various films, both reversal and negative emulsions. In all frankness it must be stated that the recording is by no means comparable to the best professional double-system 35mm sound in quality, but it is in most respects equal if not superior to most 35mm. single-system recording.

The general quality appears better than the general run of reduction printed 16mm. sound, though below that of some of the most recent and exceptional reductions. Voice quality appeared generally excellent, and intelligibility, even in instances where the speakers had indifferent microphone voices or strong accents, was satisfactory.

The designers state that the frequency response of the system has a practically flat curve to 5000 cycles, and a usable response extending several thousand cycles beyond this. No noise reduction system is as yet fitted to this recorder.

The Synero-Sound camera has been under development for several years. Its original design was the work of S. A. Murdock, while the more recent development work has been in charge of R. G. Leitner. Several of these units are already in active use. The equipment is being put into more extensive production, accompanied by a companion sound-on-film projector embodying the same basic features.

▼

Leica Prints Now Going Forward for Exhibition

Prints are now being received by E. Leitz, Inc., 730 Fifth Avenue, New York, for the Fourth Annual Leica Exhibit, which will open in the fall of this year. As in previous years, this exhibit is planned to show the progress and advance made in photography with the Leica camera. It is, therefore, open only to pictures made with the Leica.

There is no entry fee and all owners and users of the Leica camera are urged to send in as many pictures of exhibit quality as they desire. Pictures should not be smaller than 8 by 10 inches in size and may be sent mounted or unmounted. If mounted they should be on light colored mounts conforming to one of the following sizes:

8 by 10 inch prints, 13½ by 17 inch mounts; 11 by 14 inch prints, 16 by 20 inch mounts; 16 by 20 inch prints, 22 by 28 inch mounts.

Complete details on the submission of pictures to the exhibit may be had by writing to E. Leitz, Inc.

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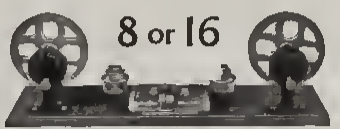
CRAIG
SPLICER and REWINDS
8 or 16

CRAIG JUNIOR COMBINATION $8.50
Junior Splicer with two geared rewinds all mounted on 21" board
CRAIG MOVIE SUPPLY CO
1053 So. Olive St. Los Angeles, Calif.

Time Payments Here

(Continued from Page 357)

getting the deeply searching few minutes in which that marvelous little Irishman Brandon Tynan held the floor.

Of course, it would be possible the picture would be weak and that Gable might not be at his best. Film prophets have been known to be right. And frequently they have slammed a good picture or play, but the dumb even if incredibly unerring multitude never knew anything about it. The shows made money. Pictures primarily are created with the object of making money.

A full answer to the squawkers is that "Parnell" is doing just that. It's the public's answer from which a showman does not appeal.

▼

VANDERBILT THRILLS

THE news reels sometimes hand us a moment of real dramatic intensity. There was one of these following the acknowledgement by Sopwith of his defeat in the international yacht race, his congratulations to Vanderbilt, his opponent, and his compliments to the designers of the winning American boat and the crew that sailed it. It was a gracious thing to say and graciously said.

Seemingly the ground was cut from under the feet of the man who immediately followed him, that same opponent. The American opened with a tribute to the preceding speaker. He cited how easy it is for a winner to be a good sport. And then in just a few sentences he praised the magnanimity and the rare sportsmanship of Sopwith.

With two real pictures on the screen the same night there was in the two of them no single flash equaling the deep drama contributed by this thirty seconds of unpretending Life.

▼

Tell It to the Film

(Continued from Page 345)

This is one type of filming in which long-shots are more desirable than close-ups. Therefore, we make our films almost exclusively with a one-inch lens. This gives us a long-shot which shows the entire end of the room, so there can be no suspicion that "strong-arm" officers lurk menacingly just out of camera range.

Our equipment uses what is known as "single-system" sound, in which sound and picture are recorded on the same film, in this case a reversal-type emulsion. It is clearly impossible to "dub in" any sound, and any deletions of sound or picture would be obvious on the screen as they would throw sound and picture out of synchronism for a noticeable interval.

By their physical nature, therefore, our pictures must be honest. In one case, the question came up in court, and both the lower court and more recently the Supreme Court ruled that such pictures, made as ours have been made, were legally good evidence.

As it is, we have a new instrument which can give definite help in proving the innocence or the guilt of a suspect. And that, when a crime cannot be prevented, is all a modern policeman asks.

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BELL & HOWELL CAMERA No 604 3a-50-75mm Hugo Meyer 1.5 lens, standard Bell & Howell eqpt., $1100.00, in guaranteed condition.

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SOUND RECORDING TRUCK AND DUBBING CHANNEL. Cost over $20,000. Complete with variable density light valve recorder, noise reduction amplifier, P. E. C. monitoring amplifier, beat frequency oscillator, 220 volts, 3 phase motor generator, 32 volt gasoline Delco battery charging unit, condenser and dynamic microphones, over 1000 feet of cable, spares and accessories too numerous to mention. Dubbing Channel consists of two 3 phase motor driven distributors, 2 interlocking motors, 4 position mixer, phonograph turn tables, 2 high fidelity dubbing heads with magazines and loop racks, P. E. C. amplifiers, etc. There are also hundreds of dollars worth of spare parts including meters, transformers, chokes, etc. Price of entire Channel and Truck, $5000. FEARLESS CAMERA CO., 8572 Santa Monica Blvd., Hollywood, Calif.

WE BUY, SELL AND RENT PROFESSIONAL AND 16mm EQUIPMENT NEW AND USED. WE ARE DISTRIBUTORS FOR ALL LEADING MANUFACTURERS. RUBY CAMERA EXCHANGE, 729 Seventh Ave., New York City. Established since 1910.

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WANTED—Used 16mm "C" mount and Model "C" Eyemo lens also used 12 Volt Electric Motor for Eyemo. Box 270, American Cinematographer.

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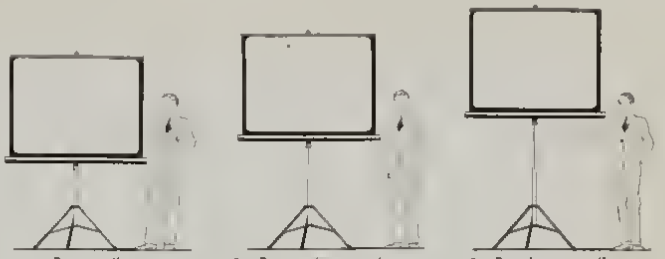

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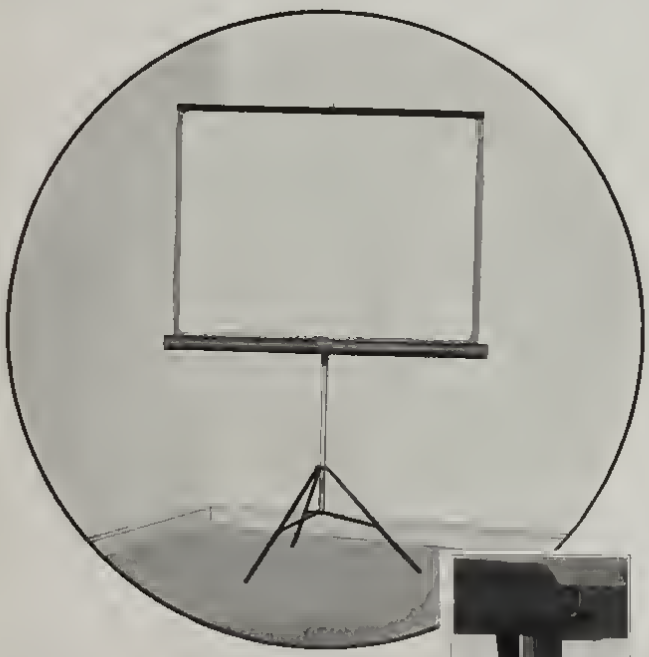

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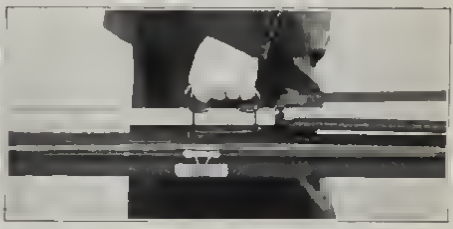

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